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Preface

Audience

The information in this guide is intended for instructors using the Maple T.A. system for the first time.

Goals

This guide serves as an introduction to the Maple T.A. system. The first five chapters provide information related to each component of the system. The sixth chapter provides additional resource information.

Initially, the chapters should be read in sequence. This provides a linear introduction to the process of using the components in the Maple T.A. system. However, this guide can be used as a quick reference or as a launching point for the Help system. For your convenience, this guide also includes an index.

Conventions

This guide uses the following typographical conventions:

- Arial bold font - dialog, menu, or text field
- “Important:” in Arial bold font- information that must be read and followed
- “Note:” in Arial bold font- additional information relevant to the section or procedure
- Century Schoolbook bold - new term
- courier font - Maple command or package
- italics - section or Help system cross-reference
1 Introduction to Maple T.A.

1.1 Product Overview

Maple T.A. uses question banks as the basis for constructing assignments. Question banks are collections of questions from class homework, test items, or other class problem material.

Four types of users interact with Maple T.A.

- Instructors create questions and assignments.
- Students complete assignments created by instructors.
- Proctors validate student identity and grant assignment access.
- System administrators manage classes and users.

As the Instructor, you control the rules and policies for assignments, which can range from self-study and homework sessions to proctored exams. When you are satisfied with the questions and rules in your assignment, you publish it for use by students. You control availability and due dates, and set grading parameters. Grades are automatically recorded in the system gradebook and, if necessary, you can change these grades.

Once you log in to the Maple T.A. system, you can access your Maple T.A. class or classes. This is where all system interactions occur for you, your students, and the proctors in your class. Your class contains question banks, assignments, resource files, and the class gradebook.

Students logged in to the system are allowed to register in your class, take assignments as you make them available, and review the results of assignments they have completed.

Note: As an instructor, you can lock access to student registration and upload a class roster instead. For details, see Student Registration on page 52.
Proctors can log in to validate a student's identity prior to administering a proctored exam.

1.2 Logging On

Log in to the system using the username and password your system administrator has provided. The main system page is called the System Homepage. The System Homepage provides access to the classes you are teaching, and those in which you are a student or proctor.

If the system administrator has created a class for you, your class will be listed under the Classes I Am Instructing section on your system homepage.

If your system administrator has not created a class for you, you can create a class. See Section 1.4.

1.3 The Class Homepage

Instructors access the Class Homepage to:

- Create and edit question banks
- Create, publish, and manage assignments
- Access a gradebook that records student work and assignment results

![Figure 1-A Class Homepage](image)
From the **System Homepage**, click the link to your class to open the **Class Homepage**. The **Class Homepage** displays the class and instructor name, and the list of assignments, quizzes, and tests that you have posted.

The assignment list displays the name and type of assignment, associated points, availability (that is, scheduled dates and times), and specific policies in the assignment, for example, time limit. Click the listed assignment name to launch the assignment.

The following menu items are available from the **Class Homepage**.

- **Actions** -> Class Info, Add Child Class, User Manager, and Proctor Tools
- **Content Manager** -> Assignments, Question Banks, Course Modules, and Website Editor
- **Gradebook** -> Open, Add External Assign.
- **Help** -> Instructor, Other Help -> Proctor, Other Help -> Student, Getting Started, and About
- **Logout**

**Figure 1-B** Class Homepage with Content Manager Menu Expanded

---

### 1.4 Creating a Class

Both you and your administrator have sufficient privileges to create unique (new empty) classes or one based on shared material.

**To create a new class:**

1. Start at the **System Homepage**.
2. From the **Actions** menu, select **Administer Classes**. (System Administrators only).
3. From the **Actions** menu, select **Add Class**.

4. Complete the class registration form. Detailed information on available fields is provided here:

   **Course ID**
   Select a unique string of letters and/or numbers as the Course ID.

   **Class Name**
   Select a unique name for your class. This name is displayed as the link to your Class Homepage. The class name should be between 5 and 50 characters long. It cannot contain the characters <, >, or &.

   **Instructor**
   Your name will be automatically entered in this field.

   **School**
   Enter the name of your school.

   **Description URL**
   Optional. If you have created a webpage with additional information for your class, you can link to the page by providing the url.

   **Registration Locked**
   Open registration allows students in the system to enroll themselves in your class. The default setting is locked, and students will not be able to enroll themselves into your class unless you unlock registration by clearing the check box.

   **Featured Class**
   Marking the class as a Featured Class allows the creation of child classes based on this class. This allows you to share the assignments, quizzes, tests, etc. with other classes by adding an entry to the **Inherited Content From** drop down menu.

   **Inherit Content From**
   You can inherit content from a parent class. This gives you access to already created assignments, quizzes, tests, etc.

5. Click **Submit**. A summary of the class details is displayed.

**To create a copy of a shared class:**
1. From the Class Homepage of the class you want to share, select the **Actions** menu, and select **Add Child Class**.
2. By default you are listed as the instructor for the new class. Click the **Change Instructor** link to select a different instructor.
3. Enter details of the instructor you are searching for and click **Search**. Alternatively, you can search for the instructor in the list of registered users.

4. Select the instructor and click **Update**. The name of the instructor should be displayed.

5. Complete the Class Registration form and click **Submit**.

### 1.5 Navigating

To navigate in the Maple T.A. system, use the menus to move forward and the Crumb bar (located under the Maple T.A. logo) to move backward.

**Figure 1-C**  Crumb Bar

![Crumb Bar](image)

It is recommended that you do not use the back and forward browser buttons or shortcut keys.

### 1.6 Accessing the Help System

Use the **Help** menu to access the online help for instructors. The help content is populated based on the role of the user logged in. As an instructor, you will be able to access help for instructors, proctors, and students.

### 1.7 Avoiding System Time-Outs

While working on a question bank, the system client (your computer) holds your changes to the working copy of the active question bank. While authoring or editing a question, if you click **Finish**, the system places a copy of your question in the class Web site cache.

**Warning**, if you do not interact with the Maple T.A. system for the time set in the system properties file (the default setting is 30 minutes) the system logs you out of your session and purges the question bank data, thereby
flushing the cache and deleting your work. Contact your administrator to adjust the default time-out setting. If you open a second tab in the same web browser and began interacting on other sites, this is not considered interacting with the Maple T.A. system. The time-out countdown will continue until you return to interacting with Maple T.A. system.

If the system server is restarted, the cache is also purged. The system reverts to the last installed version of your question bank. You can also upload a version of the question bank from your hard drive to your client.

If you stop interacting with the system for more than a few minutes, it is recommended that you either:

- Download your question bank to your hard drive
- Install your question bank in your class on the server

The question bank’s persistence time is controlled by the system administrator. To change its value, contact your administrator.
2 Question Banks

2.1 Overview

Maple T.A. uses question banks as the basis to construct assignments. Question banks form the basis of class homework, test items, or other class problem material.

Question banks are organized into topics, which contain individual questions. Topics help organize questions to match the structure of your course. They can also indicate learning objectives and other organizational schemes. Every question bank has at least one topic, and every topic must have at least one question.

Figure 2-A Question Bank Structure

There are three methods for authoring question banks in the system.

- Question Bank Editor
- Maple T.A. .qua plain-text script files
- LaTeX files that can produce math-intensive questions formatted to Maple T.A. specifications
This document discusses using the **Question Bank Editor**. For information on authoring questions banks using the other two methods, refer to the Maple T.A. help system.

### 2.2 Question Bank Editor

**To navigate to the Question Bank Editor:**

- From the **System Homepage**, access the class for which you want to create a question bank.
- From the **Content Manager** menu, select **Question Banks**.

**Figure 2-B**  Question Bank Editor

In the **Question Bank Editor** main window, you can:

- Create a **New** question bank.
- **Import** a question bank (.qu file) from your computer.
- Open a question bank from the list of class question bank titles.
- **Resume** editing the question bank project you edited most recently.
- Reorganize the displayed list of question banks by clicking the associated drop-down button and selecting placement.
- **Delete** a question bank from the list.
- **Synchronize** to the most recent version from the parent class.
- **Validate**, which ensures that your questions are properly formed questions after a question bank is uploaded to the system. This will display when appropriate.
2.3 Creating a Question Bank

When creating a question bank, the overall process must be followed.

- Start a new question bank
- Add topics because all questions must be in a topic.
- Add questions
- Save your work by saving your new question bank to the server or by downloading a copy to your hard drive.

Start a New Question Bank
To start a new question bank, from the Question Bank Editor, click New.

Add a Topic

To add a topic to your question bank:
1. From the Actions menu, click Add Topic.
2. Enter the new topic name and click OK. The system displays the new topic in the left pane.

Whenever you add a topic, the system collapses any expanded topic, adds the new topic below any pre-existing topics, and expands the new topic. To expand the previously expanded topic, click the topic name or the triangle to the left of the topic name.

Adding a Question

To create a question:
1. In the left pane of the Question Bank Editor, expand the desired topic where you want your question to reside. The topic folder opens and displays any questions (by name) in the left panel.

   Note: If you have just added the topic, the system expands the new topic automatically.
2. Click Add a question to create a new question in the topic. Begin by selecting a Question Type, providing a Question Description, and clicking Next.

Figure 2-C Question Bank Editor>Add Question Screen

3. Enter the content of your question. Examples are provided in the Example Questions on page 12.

Figure 2-D Entering a Question
4. Once you have completed the question, click Finish.

5. A preview of the question is displayed. Provide an answer and click Grade to see how the question is graded. Click Ok to return to the Question Preview.

6. Click Edit to continue refining the question as necessary.

Maple T.A. provides the following question types.

- Mathematical & Scientific Free Response Question Types (14 varieties including formula, numeric, and questions that use the Maplesoft™ Maple™ mathematical software to grade and plot student responses)
- Multiple Choice (permuting and non-permuting)
- Multiple Selection (permuting and non-permuting)
- True-or-False
- Ungraded Essay
- Fill-in-the-blank including text region or drop down menu
- Question Designer
- Key Word or Phrase
- List
- Clickable Image
- Short Phrase
- Matching
- Multipart Questions (consisting of parts that are of any question type; can be nested)
- Palette Questions (using a programmable palette of symbols for the entry of student responses)
- Questions with applet interaction
- Questions using Web references / objects (including plots)

For examples, see Example Questions on page 12.

**Saving a Question Bank**

When working in the Question Bank Editor, the system does not save the changes to the question bank until you save it. After you save a question bank to the system, it is available for assignment creation. You can also export the question bank to your hard drive, but this does not make the question bank available for assignment creation.

**Note:** You need to add at least one question to the question bank before attempting to save it.
To save a question bank that has been created or imported:

1. From the Actions menu, click Save Question Bank.
2. Enter a question bank name.
3. Click Ok. The system reports "Installation successfully completed."

Note: If you save the question bank with the same name, the system issues the following warning that you are about to overwrite the question bank. This will replace all the topics and questions in that question bank with your current topics and questions. If you save your question bank under this title, any assignments that you have set up to use the question bank that's currently saved with this title will use the new question bank from now on. However records of assignments that students have already taken, will continue to show the questions from the old question bank. Click "OK" to continue and overwrite the existing question bank, or "Cancel" to pick a different title.

2.4 Example Questions

This document discusses three question types: Question Designer, Maple-graded, and List. You are guided through the process of designing a simple multiple choice question using the Question Designer, followed by editing the previous question to incorporate randomly-determined parameters. You will also learn how to insert 2-D math into your question. Creating a Maple-graded question, inserting plots into the Maple-graded question, and a creating List question will also be discussed.

The Question Designer

The Question Designer provides a flexible format for creating free response questions that can include multiple response cells. These questions are similar to multipart questions in that they provide a shell structure in which to embed other questions.

The Question Designer is an authoring environment as familiar as your word processor. Using the Question Designer, you enter question text and the correct answers wherever they should appear. Many formatting options such as bold, italics, and fonts are available through the text editor icons. You can also insert images, tables, or links to other file resources. For information on uploading files, see Uploading Files on page 55.

When you are satisfied with the appearance of the question, you define answer regions or Response Areas, and then apply grading and other
behaviors. Like all questions in Maple T.A., you can insert algorithmic variables and inline math expressions as required.

**Figure 2-E** Question Designer

From the Question Designer you can launch the **Response Area** window, which allows you to define the question type, weighting, grading behaviors, display behaviors, and correct answers. You can define additional behaviors according to the individual question mode you select. Additionally, you can add feedback, algorithms, hints, and solutions.

At the top of the Question Designer is the toolbar which includes the unique **Insert/Edit Response Area** button that you use to activate the **Response Areas** defined in your question.

**Figure 2-F** Insert/Edit Response Area

The Question Designer supports the following question types:

- Formula Question Types: Formula, Formula Mod C, Restricted Formula, Equation, Vector of Formulas, and Chemical Equation
- Maple-graded Question Types: Formula and Maple Syntax
Multiple Choice, Non-permuting Multiple Choice (displayed horizontally or vertically)

Numeric Question Types: With and without required unit dimensions

List Questions, including text or menu input styles, exact or relaxed graders, multiple correct or incorrect responses can be specified, partial credit can be defined for each response

Essay Question

The following provides instruction for creating a simple multiple choice question using the Question Designer. In addition, navigating, previewing, and enhancing the appearance of a question are discussed. The following procedure assumes you have completed the instructions in Add a Topic.

**Multiple Choice Question using the Question Designer**

**To use the Question Designer:**

1. In the left column, select **Add a question**.
2. In the **Question Bank Editor>Add Question** window, select the **Question Designer** question type from the **Question Type** drop-down list. See “Question Bank Editor>Add Question Screen” on page 10.
3. Enter “Multiple Choice” in the **Question Description** field.
4. Click **Next**. The **Question Bank Editor** opens the **Question Designer**.
5. In the **Text of the question** field, enter the following.

   Question: What is $17 + 9$?
6. Click the **Insert/Edit Response Area** button to launch the **Edit Response Area** window.

![Edit Response Area](image)

**Figure 2-G** Edit Response Area

7. Select **Multiple Choice** in the left pane.

8. Select **Permuting** in the Permute Choices row.


10. Highlight and delete choice 2 and enter 27.

11. Press **Enter** to display a third multiple choice option.

12. Enter 23. Now that you are finished entering choices, click **OK**.

13. Click the radio button beside the correct answer to mark this answer as correct and click **OK**.
14. Click **Finish**. The **Question Bank Editor>Preview Question** window opens, displaying the question as it appears to the student.

**Figure 2-H Multiple Choice Question Preview Window**

To test and review your question:

1. In the **Question Bank Editor>Preview Question** window, select the correct answer (26) and click **Grade**. The **Preview Grade** window opens. A **Correct** icon is displayed along with your answer matching the correct answer. Click **OK** to close this window and return to the **Preview Question** window.

2. Again in the **Preview Question** window, select an incorrect answer (23) and click **Grade**. The **Preview Grade** window opens. An **Incorrect** icon is displayed along with your answer and the correct answer. Click **OK** to close this window and return to the **Preview Question** window.

In the next example, the Multiple Choice question created in the previous example is extended by specifying algorithmic variables, hints, solutions, and feedback.

**Multiple Choice Question with Randomly-Determined Parameters**

Specifying algorithmic variables allows you to generate a question that changes each time you view it. Because values in the question are randomly
determined for each instantiation, students answer variations of the same question.

**Figure 2-I**  Question Bank Editor with Algorithm Example

To specify algorithmic variables:
Continuing with the Multiple Choice question.

1. In the **Preview Question** window, click **Edit**. The **Add Question** window opens.
   Note: This procedure will overwrite the first question and not create a new one.

2. In the **Question Description** field, change the description to “Multiple Choice Enhanced”.

3. Click **Next**. The Question Designer window displays.

4. Select the Algorithm tab and click **Edit**.

5. Enter the following code in the text box.

   $a = \text{range}(10);
   $b = \text{range}(10);
   \text{condition}: \text{ne}(\text{a, } \text{b});
   \text{sum} = \text{a} + \text{b};
   \text{product} = \text{a}^*\text{b};
**The range(n) function** generates a random integer in the range 1,..., n (inclusive). There are n numbers in that range. Hence, it is a selection of one number from a choice of n.

**The condition:ne function** ensures the two variables are not equal.

$ is required to indicate a variable.

The question variables are set to $a and $b. These will range from 1 to 10. The answer is set to $sum, which is the integer value of $a+$b.

As this question is multiple choice, you must generate wrong answers to be displayed alongside the correct answer. For variation, the wrong answer variable $product is set to the randomly generated variable $a*$b.

All lines end with a semicolon.

6. Click **Save**. The Question Designer window is displayed.
7. Select the Feedback tab and click **Edit**. The **Edit Feedback** window opens.
8. Enter the following text in the feedback text field.

   The sum of $a and $b is $sum.

   As the instructor, you can choose to have this information shown to students when they view their graded assignments.

9. Click **Save**. The Question Designer window is displayed.
10. You must now edit the text of the question and the answer choices to use the variables. In the **Text of the question** field, replace

    What is 17+9?
    with

    What is $a + $b?

11. Double-click **Edit** below the multiple choice options and replace the previous answers with the variables $sum and $product.
12. Delete the third option by clicking the **Back Space** key.
13. Click **OK**.
14. Ensure that the $sum variable is selected to be the correct answer.
15. Click **OK** to return to the Question Designer window.
16. Click **Finish**. The **Preview Question** window opens. Test the question by selecting an answer and clicking **Grade**.

Note: Using the Question Designer, you can add feedback, algorithms, hints, solutions, and information fields in the same interface as the question text as illustrated in this example. You can also add these fields in the Add Question screen by selecting **Edit** beside each field. See "Question Bank Editor>Add Question Screen" on page 10. For all other question types, the Add Question window is the only place to add these fields.
Multiple Choice Question Incorporating 2-D Math

1. In the left column, select Add a question.
2. In the Question Bank Editor>Add a question window, select the Question Designer question type from the Question Type drop down menu.
3. Enter “Multiple Choice with 2-D Math” as a description in the Question Description field.
4. Click Next. The Question Designer window displays.
5. In the Text of the question field, enter the following.

What is

6. Click the Sigma button, $\sum$, to insert 2-D math. The Equation Editor opens.
7. Right-click in the Equation Editor field. From the displayed palettes, select a square root symbol. The symbol is displayed in the Equation Editor.

Figure 2-J Equation Editor

8. Replace the “a” in the square root with 144 and click Ok. The square root of 144 is now displayed in the text region in the Question Designer.
9. After adding a question mark to complete the question, click the Insert/Edit Response Area icon.
10. Select Multiple Choice in the left pane.
11. Select Permuting in the Permute Choices row.
12. Enter 12, 14, 72, 13, and 15 as possible answers, one for each field.
13. Click OK.
14. Click the radio button beside the 12 to mark this as the correct answer and click OK.
15. Click Finish. The Question Bank Editor>Preview Question window opens, displaying the question as it appears to the student.

Figure 2-K Multiple Choice Question Incorporating 2-D Math Preview

Maple-Graded Question

The Maple-graded question type uses Maple to evaluate a student response and to render a plot of the student’s response. The Maple-graded question type gives you access to the computational power of Maple. It includes facilities for algebra, calculus, differential equations, discrete mathematics, graphics, numerical computation, and many other areas of mathematics.

You can also use Maple to create questions whose responses require sets, differential equations, unevaluated integrals, and many other types of mathematical data. You can find common errors and reward partial marks.

With the Maple-graded question type, you also have access to the plotting capabilities of Maple. You can use Maple to plot a student response (or a function derived from a student response, such as the definite integral of the student response) for a Maple-graded question type. You can also use Maple to display a plot for any question type.

You must adhere to these guidelines when using Maple code for Maple-graded questions.

- A Maple-graded question must use valid Maple code to evaluate the answer. Complete each line of code with a semicolon. For information on Maple code, refer to your Maple system documentation.
- The grading code must evaluate to a Boolean value or a floating-point number between 0 and 1.
2.4 Example Questions

- Use the long form name for all package commands, for example, `VectorCalculus[ArcLength]`.
- Maplet applications are not presently accessible in Maple T.A.

Figure 2-L Question Bank Editor, Maple-Graded Question

To create a Maple-graded question:

1. Click Add a question to create a new question in a topic.
2. From The Question Type drop-down menu, select Maple-graded.
3. In the Question Description field, enter “Differentiation”.
4. Click Next.
5. Enter the text of the question field:
   
   Differentiate \( \sin(x) \cdot x \) with respect to \( x \).
6. Enter Maple code that evaluates to the correct answer:
diff(sin(x)*x, x);

7. The following Maple code to grade the student response is provided automatically:

evalb(($RESPONSE) - ($ANSWER)=0);

$RESPONSE is a system variable that corresponds to the response the student entered when completing the question and $ANSWER refers to the correct answer you entered in step 6.

8. By default, the Maple-graded question type accepts Formula expressions. In Maple-graded Formula question types, students can enter a math formula, that is, an expression constructed of numbers, variable names, and the standard arithmetic expressions and functions. The student must not use Maple commands in the response. The instructor must write code such that the student does not have to use a trailing semicolon in the response. For details, refer to the Maple T.A. Help system.

9. Scroll to the top of the page and click Finish.

10. Enter the correct answer, cos(x)*x+sin(x), and click Grade.

Plotting the Student’s Response  Using the Maple-graded question type, you can generate a plot of the student’s response. This allows students to visually check their response before proceeding.

To plot the student’s response:
1. Click Edit, and then Next. The Question Bank Editor>Edit Question>Maple Graded window opens.
2. Scroll to the bottom of the question. Using a standard plot command in Maple, enter the student’s response as well as the derivative of the question. If the student is correct, the plot region will display a plot with a single curve. In the Plotting field, enter:

plot([$RESPONSE, diff(sin(x)*x, x)], x=-10..10);

$RESPONSE is a system variable that corresponds to the student’s response.

3. Scroll to the top of the screen and click Finish.
4. Test the question by entering a response and selecting the Plot link. The plot is displayed in a separate window.

Inserting a Maple Plot in the Question Feedback  You can also insert a Maple generated plot in the question text, hints, or answer of any type of question.
To insert a Maple plot as an algorithmic variable:
1. Click Edit to edit the current question.
2. Click the Add button in the Algorithm section.

<table>
<thead>
<tr>
<th>Algorithm</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no algorithm</td>
</tr>
</tbody>
</table>

3. Enter the following:

   \$plot1=plotmaple("plot(sin(x)*x, x=-10..10)");

4. Click Save. You can use the algorithmic variable \$plot1 to display the Maple plot in all question types anywhere algorithmic variables can be used, i.e. in the question text, hints, and feedback.

5. Click the Add button in the Feedback section.
6. Enter the following:

   A plot of the expression is \$plot1.
7. Click Save.

Apply Partial Grading to Maple-graded Questions

You can modify Maple-graded questions to allow grading between 0.0 and 1.0 for part marks.

The following is a simple application of partial marks. In solving 3x+6=12 for x, students may add 6 to 12 instead of subtracting it. If they made this error, but divided by 3 properly, they would get a result of 6. In this case, the instructor can give them half marks by using the grading code shown below.

<table>
<thead>
<tr>
<th>Text for the question</th>
<th>Solve for x in the following equation: 3x+6=12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maple code that</td>
<td>solve(3*x+6=12,x);</td>
</tr>
<tr>
<td>evaluates to the</td>
<td></td>
</tr>
<tr>
<td>correct answer</td>
<td></td>
</tr>
<tr>
<td>Maple code to grade</td>
<td>if ($RESPONSE=6) then 0.5 else evalb($RESPONSE- ($ANSWER)=0) end if;</td>
</tr>
<tr>
<td>the student response</td>
<td></td>
</tr>
</tbody>
</table>

List Question using the Question Designer

To create a List question:
1. Click Add a question to create a new question in a topic. The Question Bank Editor> Add Question window opens.
2. In the Question Bank Editor>Add Question screen, select the Question Designer from the Question Type drop-down list.
3. Enter “List” as a description in the Question Description field.
4. Click **Next**. The **Question Designer** window opens.

5. In the **Text in the question** panel, enter the following question.

   Who introduced the Arabic number system to Europe?

6. Click the **Insert/Edit Response Area** button to launch the **Edit Response Area**.

   ![Figure 2-M Insert/Edit Response Area button](image)

7. In the Choose Question Type area, click **List**.

   ![Figure 2-N List Question Type using the Question Designer](image)

8. The default Matching Type is set to **Exact text match** which applies strict grading, case-sensitive, literal string-matching as your grading mode. To invoke a less stringent grader that ignores case sensitivity and punctuation, select **Ignore case text match**. The List mode also provides a
regular expression-matching grader, useful for customization of the grading routine. These fields are applicable when the Display mode is set to Text Field, which presents students with a blank response area. For this example, select **Drop-down Menu**. Ensure the Permute list check box is selected.

9. Enter answer choices in the **Item** fields. To add additional items, click the **Add Item** button.

10. As you add possible answers, the system assigns them a credit value of “0.0” in the right column. Additional answers are graded as fully correct (“1”) or partially correct answers (with any value between 0 and 1 assigned). Edit the weight for Leonardo Fibonacci and enter 1.0.

11. Click **OK** to exit the **Edit Response Area** window.

12. Click **Finish** to exit the **Edit Response Area** window.

13. Click the **Finish** button at the top of the **Question Designer**. The Question Bank Editor displays the question as it is viewed by students.

**Numeric Question using the Question Designer**

1. In the **Question Bank Editor>>Add Question** screen, select the **Question Designer** from the **Question Type** drop-down list.

2. Enter “Question Designer Numeric” as a description in the **Question Description** field.

3. Click **Next**. The **Question Designer** opens.

4. In the blank text area, enter the following question.

   Round 2.76789 m to three significant digits.

5. Click the **Insert/Edit Response Area** button (check mark symbol) to launch the **Edit Response Area** window.

6. In the **Choose Question Type** area, select **Numeric**.

7. Enter the correct answer “2.77” in the **Numeric Part** field.

8. Click the blank field next to the **Units Part** field and enter a required unit dimension for the correct answer (in this case, m for meters.) If you do not enter a required unit dimension, the system displays only a single response cell that accepts only numbers for student answers. If you do enter a required unit dimension, students are presented with two cells: one for the number part and one for the unit dimension. The student must enter correct values in both cells to receive full marks for the question.

9. To set the margin of error, click the **Required with** drop-down menu, which is set to **Absolute Accuracy** by default.

   You can specify absolute precision (student answers must match the defined answer exactly), or a significant figure precision for an exact answer match.
10. Modify the tolerance by choosing one or more of the numeric formatting options. The available options are Absolute Accuracy, Set # figures, Margin of error, Margin in n'th digit, and Percentage margin.

11. Click **OK** and then **Finish** to save and preview the question.

**Equation Editor**

You can enter symbolic math in any question type. In the **Add Question Text** window, (this window usually displays after the **Question Bank Editor**> **Add Question** window for each question type), click the Sigma symbol in the toolbar. The **Equation Editor** dialog opens. Right-click (**Control**-click for Macintosh) to access the palettes.

**Figure 2-O** Enter Symbolic Math

---

2.5 **Editing an Installed Question Bank**

As the need arises, you can edit your installed question banks to update your assignments and change your questions.

**To open an installed question bank:**

1. From the **Class Homepage**, click **Content Manager** and select **Question Banks**.
2. From the **Question Bank** list, click the name of the question bank to open for editing.
3. Proceed with editing as required.
4. When you have completed editing, save the question bank. From the **Actions menu** click **Save Question Bank**.

When saving an updated version of a question bank, you can:

- Replace the previous version by using the same name. New assignments that reference the previous version are automatically edited to use the updated questions from the new version.
- Keep both versions by using a new name. Assignments that reference the previous version of the question bank continue to use the previous versions of the questions. To use the new questions, create new assignments or edit old assignments to reference the updated question bank.

## 2.6 Downloading a Question Bank

### Backing up a Question Bank to Your Hard Drive

The process in this document outlined the creation, editing, and installation of a question bank. While editing a question bank, it is recommended that you install the question bank or back up your work by downloading to your hard drive regularly.

To back up a question bank by downloading to your hard drive:

1. From the **Question Bank List**, select a Question Bank.
2. From the **Actions menu**, select **Export Question Bank**. The File Download dialog opens.
3. The question bank is listed with the temporary name `testbank.qu`. Click **Save**. In the **Save As** dialog, navigate to a suitable directory and enter a question bank name. Click **Save**. The file is saved with the `.qu` extension.
4. A message is displayed indicating the download is complete. Click **Close**.

### Opening a Question Bank Downloaded to Your Hard Drive

You can import the saved question bank file (plain-text script file), and then continue editing or install it in your class.

To open a question bank file that was downloaded to your hard drive:

1. From the **Class Homepage**, click **Content Manager** and select **Question Banks**.
2. Click **Import**.
3. To locate your file, click Browse.
4. Navigate to the source file on your hard drive and click Open. The path and filename are displayed in the Question bank field.
5. Click Import. The topics are displayed in the left panel of the Question Bank Editor.
6. Save your imported question bank. From the Actions menu, select Save Question Bank.

When you upload a question bank file into the system, it performs a set of validation routines to ensure that the questions function. Occasionally, you may encounter an error with a variable name or definition upon uploading. The following is a summary of the system's analysis of variables upon initial loading of a question bank file.

- For variables displayed within HTML text, for example, in a question statement or feedback area, a problematic variable does not produce a data value generated from its definition. Instead its variable name is displayed, highlighted in red.
- For variables appearing in non-displayed field parameters, for example, the answer to a question, the variables $ANSWER and $RESPONSE default to 0. All others have the variable name passed.
3 Assignments

3.1 Overview

Assignments are created by selecting questions from question banks. The assignments you create can be organized such that Maple T.A. reorders questions, generates questions (based on a range of variables you define in the question bank), or displays a subset of questions. Each student viewing your assignment can potentially complete a unique set of questions.

Figure 3-A The Relationship between Question Banks and Assignments

The Assignment Editor allows you to create new assignments, edit the content, properties, and appearance of existing assignments, delete assignments, and change the order of existing assignments.
Assignment Editor Main Menu

From the Class Homepage, click Content Manager and select Assignments. From the Assignment Editor main window, you can:

- Click New to create a new assignment.
- Reorganize the order of displayed assignments using the numbered list beside each assignment.
- Open assignments for editing by clicking the assignment name link.

To activate other options, hover your mouse over the assignment name. Six option buttons are displayed.

- Edit assignments by clicking edit.
- Copy assignments by clicking copy.
- Delete assignments by clicking delete.
- Hide/show assignments from student view in the Class Homepage by clicking hide/show.
- Print assignments. Clicking the print link displays the print preview of the assignment. You then have the option to print the assignment or click Back to return to the Assignment Editor.
- View a summary of the assignment by clicking summary.

Figure 3-B Assignment Editor

The Assignment Editor main menu lists assignments created for your class. These assignments may be populated with a series of assignments based on testing materials, or other shared question banks. If not, you initially see a blank list here. For more information on shared classes, see Shared Classes on page 55.
Warnings and Locking Mechanism

When an assignment is opened for edit, the system checks and warns the instructor whether the assignment has associated student records in the Gradebook or is currently in use by a student.

Note: The number of students currently using the assignment is displayed in the Active field of the Assignment Editor main menu.

- If the assignment is currently in use, the questions in the assignment are locked so that an instructor cannot edit them. You can edit some of the policies of the assignment like the time limit for example.
- If the assignment is not currently active, the assignment is locked for editing so that new active tests cannot be started during the editing process. Students who try to start the assignment while it is locked are notified with a warning message.

3.2 Creating Assignments

The Assignment Editor organizes assignment creation into a four step process.

- Naming your assignment
- Selecting questions
- Establishing rules and policies
- Reviewing, finishing, and publishing assignments to your class

To start a new assignment:

1. From the Assignment Editor screen, click New to begin a new assignment. The Assignment Editor displays four tabs: Choose Name, Select Questions, Set Policies, and Review & Finish.
2. Proceed to the instructions in Naming Assignments.
3.3 Naming Assignments

The assignment name is displayed to students on the Class Homepage.

To name your assignment:
1. In the Choose Name tab, enter a name for your assignment in the Choose A Name For Your Assignment field.
2. Optional. Click the Advanced button. Add assignment-level page headers and text for the results page in the appropriate fields.
3. Proceed to the instructions in Selecting Questions.

3.4 Selecting Questions

The Select Questions tab of the Assignment Editor allows you to select questions (individually or as a group) from question banks, assign question weighting, scramble the sequence of delivery, and merge individual questions to form specific question groups.

To select questions from question banks:
1. In the Assignment Editor, click the Select Questions tab.
2. From the Question Bank list, select a source question bank.
3. If required, expand the topic lists and select the questions you want from the list on the left using the check boxes. Click the Add button after selecting a question or complete the selection process and click the Add As Items button. In either case, individual questions are added to your assignment.
4. Optional. To add a selection of items as a group, select questions using the check boxes. Click Add As Group to include them as a pool of questions within your assignment.
5. Optional.
   - Change the default question weighting (one point per question) to match your requirements.
   - Select Scramble questions to randomly order the questions when assignments are created.
   - Reorder questions within your assignment by using the drop-down lists.
   - Merge individual selected questions to form new question groups in your assignment.
6. Proceed to the instructions in Setting Policies.
Individual Versus Grouped Questions

Individual Questions  If you add selected questions to your assignment as individual questions, each one is included in every version of the assignment served to a student, and you control question weighting individually.

Question Groups  Adding questions in question groups provides you with the added option of selecting a group of questions and having the system select from the questions at random, according to criteria you specify (for example, choosing three of seven questions from the group each time a new assignment is created for a student). You set a single point value that is applied to every question in the group.

3.5 Setting Policies

In the Set Policies tab of the Assignment Editor window, you can:

- Select the type of assignment
- Set feedback options for the assignment
- Decide when to make it available to your class
- Establish other grading policies
Figure 3-C Assignment Editor, Set Policies Tab

Assignment Types

Assessment Type Assignments You can create graded assessments (Homework or Quiz and Proctored Exam), ungraded practice tests (Anonymous Practice), or assignments with set criteria (Mastery and Study Session). You can configure the number of questions on a page, create test instruction sheets and headers, and set policies for restricted access, repeated attempts, and other options.

Students answer questions one page at a time, and the system records their responses between pages. Jumping from question to question within an
assignment is allowed until students complete all questions (or choose to ignore the warnings to do so) and submit their responses for automatic grading.

**Homework or Quiz** assignments have the following format.

- Students are presented with an assignment consisting of any number of instructor-selected questions.
- Questions are delivered either in an instructor-specified or random sequence.
- Student responses during sessions are recorded (but not graded) after every question, so assignment sessions can be interrupted and continued upon next login.
- Students must be registered in the class and logged in to begin a Homework or Quiz assignment.
- By default, Homework or Quiz assignments can be attempted multiple times for credit. To limit the number of attempts a student can make on a particular assignment, use **Assignment Properties** of the **Set Policies** tab in the **Assignment Editor**.
- Results for every attempt at a Homework or Quiz assignment are recorded in the Gradebook for the class.

**Proctored Exams** are similar to Homework or Quiz assignments, but with an additional security measure to confirm the identity of the student taking the test. All Proctored Exams require a proctor to authorize students submitting their test for grading. You can require proctor authorization to validate student identity and grant assignment access at the start of a proctored exam. Students must be registered in your class. They are required to provide their student login and password to access assignments in addition to proctor authorization.

There are two types of proctors: **Global** and **Local**.

- Global proctors are defined by the System Administrator and can give authorization for any class.
- Local proctors are defined by the Instructor and can only give authorization for a particular class. To set up a local proctor, navigate to the **Class Homepage**. From the **Actions** menu, select **User Manager**. From **Actions** menu, select **Register Users**. In the User Role row, select the Proctor radio button. Select, or search for, a user from the list of registered users and click **Register**.

Proctors can give authorization directly, at the student's computer, or remotely through the **Proctor Tools** menu. In both cases, the proctor must sign in by giving a login name and password. To give authorization remotely,
the proctor must login, select the class and from the Actions menu, select Proctor Tools.

Anonymous Practice assignments are similar to Homework or Quiz assignments; however, the students results are not recorded. Any number of questions can be included, and the assignment is delivered in an instructor-specified sequence (or scrambled). Graded assignment reports are produced upon conclusion of the assignment, but results are not recorded in the Gradebook. Students can view their results at the end of the session; no permanent record is maintained. Results can be printed, but are only available for as long as a student displays them.

Study Session and Mastery These assignments usually draw from a large pool of assignment material (often algorithmically generated to produce limitless question permutations). The instructor chooses the questions to include and sets criteria for mastery assignments.

Assignments are delivered one-question-at-a-time, and the student submits each question for grading individually and immediately, instead of having the entire test graded at the end.

Mastery and Study Session assignment types emphasize the following pedagogical approaches.

- For Mastery assignments, instructors create carefully structured collections of questions grouped by learning objectives. Mastery assignments require a login and password, and results are recorded in the Gradebook. The default delivery is in sequential order.
- For Study Sessions, students control the study process by practicing question after question. You can provide hints and full solutions for questions to students while they work. Results are displayed one question at a time and are not recorded in the Gradebook.

For assignment attributes, see the following table.
3.5 Setting Policies

Setting the Assignment Type

To set the assignment type:

1. Select one of the options in the Type of Assignment group box in the Set Policies tab of the Assignment Editor. Homework or Quiz is the system default assignment type.

2. For any assignment type, you can click the Advanced button to set prerequisite conditions.

   If you select Mastery assignment type, by default, questions are organized in sequential order. To specify additional criteria for your assignment, click the Edit mastery policies link. For details, refer to the Set Mastery Policies help page in the Maple T.A. Help system.

Assignment Feedback

You can specify the type and timing of assignment feedback displayed to students.

   Note: You can allow access to question hints (if they exist) in any assignment type. If you choose to display hints and comments but your source questions (from the Question Bank) do not include them, the system ignores the display settings.

To set assignment feedback:

- To display hints during an assignment, select the Show hints check box.
- To display the final grade after the assignment is graded, select the Show the final grade check box.

Table 1: Assignment Types

<table>
<thead>
<tr>
<th>Assignment Type</th>
<th>Graded</th>
<th>Recorded in Gradebook</th>
<th>Student Registered in Class</th>
<th>Hints Available</th>
<th>Solutions Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anonymous Practice</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Homework/ Quiz</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Mastery</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Proctored Exams</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Study Session</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>
During the assignment, you can display the correct answer or a comment for each question. Select from Always, If correct, If incorrect, or Never condition options for displaying the correct answer or question comment.

After the assignment is graded, you can display the correct answer or a comment for each question. Select from Always, If correct, If incorrect, or Never condition options for displaying the correct answer or question comment.

The program can send you an email whenever a student completes the assignment in Homework and Proctored Exam mode, giving the name of the student and the result. To receive email notification, select the Send email reports to check box and enter your email address.

Note: To use this feature, your system administrator must have an SMTP server configured.

You can restrict feedback so that feedback details are not displayed until a certain date. Click the Restrict Feedback check box and click the calendar icon to choose a date.

Assignment Properties

In the Assignment Properties dialog, you can set:

- Passing score
- Time limit
- Number of questions on a page
- Maximum number of times an assignment may be taken

Setting a Passing Score If you select the Practice, Homework, or Proctored Exam assignment types, you can set a passing score for the assignment. If you set a score, the system assesses each assignment attempt as either Pass or Fail, and records this information in the Gradebook automatically. You can customize the pass/fail feedback by clicking the Edit Feedback Messages link. The field shows the total available score for the assignment (for example, out of 10), which varies according to the composition of your assignment.

Setting a Time Limit If you select Homework or Proctored Exam assignment types, you can set a time limit for the test. If you set a limit, the program shows the student the time remaining during the course of the test. If the time limit expires during the test, the system informs the student, and does not allow the student to enter responses to any more questions.

Note: The timer does not stop until the student runs out of time or clicks Grade. The timer will continue to run even if the student has clicked Quit and Save.

Setting the Number of Questions per Page By default, the program displays one question per page when presenting an assignment to students.
You can use this option to deliver more than one question per page. If you have used question annotations and set the annotations to display at the top or the bottom of the page in which the question is loaded, your annotations appear as a page-level header or footer (rather than immediately before or after the question).

**Note:** Mastery and Study Session assignments automatically serve one question at a time. This is part of their instructional design and this setting cannot be changed for these assignment types.

**Tip:** If you are concerned about a student's ability to assess complicated questions over a slower online connection, it is recommended that you accept the default setting of one question per page. Loading one question at a time usually allows a student to move through the assignment effectively, but also saves each question response as it is completed.

**Setting the Maximum Number of Attempts** For Homework and Proctored Exam assignments, you can set the maximum number of times a student can take an assignment. If the student attempts more than the maximum amount, a message is displayed indicating the restriction. If the assignment is a Proctored Exam, the student can click the **Exception** button displayed in the restriction message screen. A proctor can then provide authorization.

**Scheduling Assignments**

Using the calendar function in the **Scheduling** dialog, you can set **Start** and **End** times for each assignment. These times govern the availability of the assignment to students accessing your Class Home Page. Scheduled times refer to your server clock and system's time zone set by your System Administrator.

Before and after the indicated availability window, the assignment is still displayed in the assignment list viewable by students on your Class Home Page, but it cannot be selected. Note that unavailable assignments appear in the list of assignments on the **Assignment Editor Main Menu** page. Additionally, unavailable assignments will appear in the student's past results page, if the student completed them.

**Assignment Visibility**

- Optional. By default, the **Visible** check box is selected. Clear this check box to temporarily exclude the assignment from the list of assignments displayed to students on your Class Home Page. Or, in the **Assignment Editor** main menu, click the **hide** option available on mouse rollover of the assignment name. See **Assignment Editor Main Menu** on page 30.
3.6 Reviewing and Saving Assignments

In the Review & Finish tab of the Assignment Editor, you can review assignment summary information, including:

- Assignment Type
- Questions Selected
- Scheduled Availability
- Rules and policies you established

To change settings in your assignment:
1. In the Review & Finish tab, click the highlighted link in the category to be changed.
2. A prompt appears asking whether to return to the tab where the option is set. Click OK. The appropriate Assignment Editor tab opens.
3. Make changes and return to the Review & Finish tab.

Finishing an Assignment

To accept and publish the assignment you have created or modified:
- Click Finish in the Review & Finish tab. You are returned to the Assignment Editor list of assignments for your class, where your new assignment is displayed in the list of all class assignments.

Assignment Status

Consider the following information regarding your assignment status.

- If you have scheduled the assignment for immediate availability, your new assignment is available for students in the Class Homepage.
- The system does not save partially completed assignments until you click Finish in the Review & Finish tab of the Assignment Editor. If you begin to create an assignment and then abandon it without clicking Finish, your additions and changes are lost. If you need to leave the Assignment Editor without finishing the assignment, it is recommended that you mark the assignment as hidden so that students cannot access it. Hide assignments from student view in the Class Homepage by hovering the mouse over the assignment name in the class assignment list, and then clicking hide.
- If the server shuts down before you click the Finish button, your editing changes will be lost. When the server restarts, it uses the last saved version of your assignment data. To reduce the risk of this during long assignment editing sessions, it is recommended that you periodically click
the Finish button, then select your assignment from the main Assignment Editor list of assignments to start a new editing session.

3.7 Special Cases

Deleting Assignments

You can select and delete assignments in the main Assignment Editor window. If there are grades associated with an assignment, and you rename or delete the assignment, a copy is made. Also, results continue to be available through individual student records. To learn more about the Gradebook, see Chapter 4: Gradebook on page 43.

Shared Assignments: Saving Your Changes

The following information refers to shared assignments. You may want to return to this section after reading Shared Classes on page 55.

When you complete changes (by clicking Finish in the Review & Finish tab) in a shared assignment and change the Assignment Name, your copy of the assignment automatically appears in the Assignment List of the Assignment Editor Main Menu.

Your assignment appears under its new name in the Assignment List. Note that the original assignment, inherited from the shared or template class, also appears in the list.

If you do not want the original assignment to appear, remove it from view.

- In the Assignment Editor main menu, click the hide option available on mouse rollover of the assignment name.
4 Gradebook

4.1 Overview

Maple T.A. automatically stores assignment session scores in the Gradebook. The Gradebook stores information for each student, such as the assignment start time, the time spent on the assignment, and the individual assignment question performance.

The Gradebook allows you to:

- View, analyze, and report scores and statistics for students, assignments, and question items
- Review and edit student results
- Create reports organized by student, assignment, or by question
- Export grades to comma-delimited, Microsoft® Excel, or XML files

To access the Gradebook:
- From the Class Homepage, click Gradebook and select Open.

4.2 Gradebook Views

The Gradebook provides three views of assignment data: by student, by assignment, and by assignment item or question.

- To view the grades for an assignment, select an assignment in the search panel and select Submit. The results are displayed below the Search and View panels.
To view summary statistics for each assignment, click the link to a particular assignment in the student results table. From this view, you can see summary statistics for each question on an assignment.

Figure 4-A Gradebook

Generating Reports

You can change assignment weighting, grades, or add comments from within a generated report of an assignment or test.

To generate a report in the Gradebook:
1. In the Search Panel, select the assignment(s) to include in the report.
   - To include more than one assignment, press the CTRL key and click the assignments.
   - To include all assignments, select All.
2. Specify the search criteria from the following options:
   - Assignment Type - To specify a single type of assignment from Proctored, Homework/Quiz, Mastery, and External.
   - Show Results - To display results, for example, best or most recent.
   - Completed/In Progress - To display only Completed, In Progress, or To Be Reviewed assignments.
   - Date Range - To specify date range. Assignments completed within that date range will be included in the report.
3. In the View Panel, select the data to include in the report from the following options:
4. Assignment - To display the date and time the assignment was started and finished, the time required to complete, and the number of attempts.

4. Student - To display student information, such as first and last name, middle initial, login and password, email address, and student ID.

4. Grade Style - To indicate presentation style for the grade.

4. View Results for - To display statistics for student, proctors, or instructors (multiple items can be selected simultaneously).

4. List - To display all users, or only users with grades.

4. Summary Data - To display the weightings information, number of attempts and average number of attempts, total number of points, and average score.

4. Click **Submit** to generate the report.

### 4.3 Student Statistics

**Figure 4-B Student Statistics**

From the generated report, you can view a student record report, change the weighting for assignments, and change grades.

To view a student record report, click on the first or last name of a student in your generated report. The student record report contains the following details about the student: login, email, student ID, number of completed assignments, and number of active assignments. The student's best and average scores are displayed for each assignment, as well as the number of attempts. The overall class best score, average score, and number of attempts
are displayed for comparison purposes, as well as the total points for the assignment.

Additional information about each assignment session is displayed: start and end time and date, and duration.

**Assignment Weighting**

To set weightings for each assignment, generate a report with the Weightings option selected, and then click the **Weighting** link in the report. You can set weighting for each assignment with respect to the cumulative grade for the class. Enter the weighting for each assignment, with the total for all assignments equal to 100%. You can Lock individual assignments to prevent their weighting from being adjusted.

Additionally, you can change the total points of the assignment. If, for example, one question was clearly too difficult in comparison to the rest of the assignment, you can override the total points, making the assignment out of 9 instead of 10 points.

The **Zero** button sets all weightings to 0% and the **Reset** button resets the weightings to the original settings.

**Changing Grades**

From a generated report, you can change a student’s grade. You may change a student’s grade for several reasons:

- The system does not automatically grade essay questions, so you must enter a grade for any essay questions included in your assignment.
- You might choose to raise a student’s grade based on effort, improvement, or other subjective measures.
- You might choose to apply a curve, based on the performance of the entire class.
To change a student grade:

1. In the resulting report, click the student name. The student record opens as shown in Figure 4-C.

2. Beside each assignment is a link called Details. Click this link to display the assignment results.

3. Edit the grade in the New Grade field.

4. Optional. Add comments in the Comment on Grade box. These comments are strictly for your records; they are not visible to the student.

5. Optional. Add comments in the Instructors Comment box. Students see these comments when they review their performance on the test. You can add personalized comments to help individual students understand their scores and master the material.

6. Click Update at the top of the page.

7. Click Submit to regenerate the statistical information.
4.4 Assignment Statistics

From the generated report, you can view details about the assignments.

To view assignment details, click on one of the assignment links at the top of the student report table.

**Figure 4-D Assignment Link**

The following details are displayed: original and current total points, date last modified, class average, number of attempts, average number of attempts, and number of active assignments. Details about the assignment setup are displayed as well. A histogram of the assignment statistics is provided.

The student report table now displays the students' performance on each question in the assignment. Click on a question in the table to display the details of the question.

**Figure 4-E Assignment Statistics**
4.5 Item Statistics

The system collects statistical data on the questions used in your assignments. It can automatically produce various statistical analyses based on item usage and student performance.

View item statistics by clicking on the Item Statistics link below the View Panel. Statistical information for each question includes the success rate, p-Value, d-Value, number of times the question was answered, the number of times the question was answered correctly and incorrectly, and if any partial marks were given.

Additionally, for non-permuting, non-algorithmic multiple choice questions a chart is automatically displayed with the frequency each choice was selected.

**Figure 4-F Item Statistics**

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
<th>Success Rate</th>
<th>p-Value</th>
<th>d-Value</th>
<th>Correct</th>
<th>Partial Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear equations</td>
<td>1. x = 20</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2. x</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>3. 16 x</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>4. y</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>5. z</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percentiles of subinterval, order of subintervals</th>
<th>Success Rate</th>
<th>p-Value</th>
<th>d-Value</th>
<th>Correct</th>
<th>Partial Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. y = 10</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. y = 10</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. y = 10</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. y = 10</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. y = 10</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Postulates</th>
<th>Success Rate</th>
<th>p-Value</th>
<th>d-Value</th>
<th>Correct</th>
<th>Partial Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 2x = 3x</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. 4x = 3x</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. 2x = 3x</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. 4x = 3x</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. 4x = 3x</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

4.6 Add External Assignment

The Gradebook gives you the ability to add the marks of an assignment that is not in the system. To add the marks of an external assignment:

- From the Class Homepage, click Gradebook and select Add External Assign.
- Enter the assignment name, total points, and a passing score in the appropriate fields.
• Enter a score for each student and, optionally, a comment.
• Click Save to finish, or Save & Add Another, to add another external assignment.

External assignments are displayed in the gradebook with other assignments.
5 Class Management

5.1 Overview

Various system tools enable you to manage your class and exchange course material between your class and others with Maple T.A. You can perform the following tasks.

- Register and manage proctors for your course
- Edit your instructor profile
- Lock or unlock access to student registration for your class
- Share your assignments and question banks with other instructors
- Work with files on your class web site
- Create and deploy course modules

In this chapter, the following topics are covered.

- Class Roster
- Uploading files to your class web site
- Shared classes
- Course modules

5.2 Student Registration

Before the Gradebook can begin tracking student performance, it must have students registered in the course. You can register students in your class by:

- Using the User Manager
- Allowing students to register themselves for your course
• Creating and uploading a class roster

To register students in your course, they must have an account in the system. Creating user accounts is usually done by the system administrator, although the administrator can give instructors the ability to create user accounts. If students do not have user accounts when they are registered in the class, accounts are created for them automatically at that time. In addition, the system administrator can set up the system to allow students to create their own user accounts.

Using the User Manager

You can select students to register in your class from a list of system users. You can also search the list for a user that satisfies particular criteria.

1. From the Class Homepage, click Actions and select User Manager. From the Actions menu, select Register Users.
2. Enter search criteria to narrow the list of users down or to search for a particular student.
3. Select the checkbox beside the students you want to register in your class.
4. Click Register.

Student Registration

Students can register for your class using the Find classes open for registration link on the System Homepage. The student selects the class he or she wants to enroll in, and clicks Register. The student then clicks Confirm and must complete the form on the Student Registration screen. You can lock access to this form of registration from your class homepage. From the Actions menu, select Class Info, click Edit and select the Registration Locked check box.

Creating a Class Roster

The class roster must be a comma-separated file (for example, *.csv) or tab-separated file (for example, *.tsv) that has one line for each student. The first line must be a header row that specifies the data contained in each column. The headers can be in any order, to make it easy to match your existing format. Possible headers for each column are as follows:

Login, First Name, Middle Initial, Last Name, Email Address, Student ID, Password, Role, Validate

• The fields that are underlined are required.
• Login must be at least one alphanumeric character.
First Name must be at least one alphabetical character.
Middle Initial must be no more than one alphabetical character.
Last Name must be at least one alphabetical character.
Email addresses must be unique.
Student ID must be at least five alphanumeric characters.
Password must be at least five alphanumeric characters.
If no password is provided, the system generates one which is displayed on
the next page. You can print or save this page. If it is not printed or saved,
the automatically generated login and passwords will be lost.
Role can be Administrator, Instructor, Proctor, or Student. The role
specified cannot exceed the level of the user who is creating the roster. The
default is Student.
Validate is a yes/no field and determines whether students have to review
their data on first login and validate it. The default setting is ‘yes’.
If you have a null field (for example, a student did not provide a middle
initial), use two consecutive delimiters.

Uploading a Class Roster
You can upload a class roster from your Class Homepage. This will register
users in the system as students in your course.

1. From the Class Homepage, click Actions and select User Manager. From
the Actions menu, select Roster, and then Import.
2. To locate your class roster, click Browse. Navigate to the file and click
Open.
3. From the drop-down menu, select the type of file being submitted as either
Comma-separated or Tab-separated.
4. Click Submit. A table is displayed that includes all columns and
information in the file.
5. Click Enroll Roster. A roster upload summary is displayed.

You can also import users from your System Homepage if you have create
privileges. This will add students into the Maple T.A. system, but you will still
need to register the students into a course.

Updating a Class Roster
Class rosters can be updated by importing rows with Login values that are
already present in the T.A. database. If an import row specifies a Login that
already exists and an LDAP system is being used to maintain the database,
then the user profile attributes are refreshed from the LDAP system. In this
case, the only column required in the import row is the Login column. In other cases, the behavior is as follows:

- The imported attributes overwrite the corresponding attributes in the T.A. database.
- Empty attributes are ignored and do not overwrite existing information. An attribute is empty if it is delimited by successive commas or tabs with no intervening character.
- An attribute may be overwritten to null by providing the special T.A. string <Null> as its import value.
- An attribute that is specified as one or more spaces will be trimmed and will overwrite the database attribute with an empty string (different from a null value).
- Attribute values not included in the import (that is, with no column in the import) are not modified in the database.

Batch Removal

Large groups of students can be removed from the system at once using a special type of import. In this case, only the Login column of the import file is used or required.

1. From the System Homepage, click Actions and select Administer Users. From the Actions menu, select Roster, and then Delete.
2. Click the radio button to determine if the users will be “permanently deleted (cannot be restored)”, or “marked as deleted (can be restored)”.
3. To locate the roster for batch removal, click Browse. Navigate to the file and click Open.
4. From the drop-down menu, select the type of file being submitted as either Comma-separated or Tab-separated.
5. Click Submit. A table is displayed that includes all information in the database for the users selected.
6. Click Delete Roster. A roster validation summary is displayed.

Users that are “permanently deleted” are removed from the entire system, along with any assignment answers or grades owned by those users. Users that are “marked as deleted” are moved to a separate database within the system and no longer have access to the system, but all of their information is stored. They can be restored later by doing a search for deleted users in the Administer Users page, selecting the check boxes beside their names and clicking Restore. Permanently deleted users will not show up on a search for deleted users.
5.3 Uploading Files

In conjunction with your Class Homepage, your class also has a web site folder on the system that you can use to store images and other resource material (such as Maple library files) used in your question banks. The Website Editor provides a list of the web site content and gives you options for uploading, organizing, and deleting files.

To manage files on your class web site:
- From your Class Homepage, click the Content Manager menu, and select Website Editor.

You can upload multiple resource files to your class web site if you package them in a compressed zip file first. The Zip Archive option is useful if you have many files to upload.

To upload a file:
1. Click the icon next to the instruction upload files(s) to this point...
The Website Editor/Upload Files screen is displayed.
2. Click Browse to locate and select the file.
3. Click the Single File or Zip Archive radio button. The system uploads the file directly to your class web site, with the name you specify. (The default name is the name of the file on your computer.) In the case of a zip file, the program extracts all the files from the selected zip file and uploads them to the web site. (If the selected file is not a zip file, the program does not upload a file.)
4. Click OK to perform the upload and return to the list of files on your web site. The uploaded file appears with the list of files in the Website Editor.

Important: The default maximum size of a file that can be uploaded is 2 MB. This maximum size can be set in the Maple T.A. system.properties file. Contact your system administer to adjust this size. If you receive a message informing you that your upload exceeds the server limit, contact your system administrator.

Note: For maintenance and sharing purposes it is recommended that you create a folder within the Website Editor and upload files to that folder. See Additional Notes on page 61.

5.4 Shared Classes

You can share your question banks, resources, and assignments with other instructors.
• Class sharing is an ideal way to manage multiple class sections of a large course using common question banks and assignments, ranging from practice sessions to exams.
• Shared classes can also contain unique question banks and assignments that are not part of the parent class.

When you share a class, you create a single parent class whose question banks and assignments are cloned. The question banks and assignments are inherited by each child class instance created when registering a copy of the parent.

Question banks and assignments inherited from a parent class are always identified by the shared class icon, which appears beside the assignments and question banks in the Assignment List and Question Bank List.

**Figure 5-A** Inherited Assignment Icon

---

**Creating a Shared Class**

To share the contents of your class with other instructors:

1. From the Class Homepage, click the Actions menu, click Class Info, and select Edit.
2. Select the Featured Class check box.
3. Click Submit to save your changes.
Other instructors can create a copy of your class, including your question banks and assignments, by creating a new class and choosing your class from the Inherit Content from list.

To remove class sharing:
1. From the Class Homepage, click the Actions menu, click Class Info, and select Edit.
2. Clear the Featured Class check box.
3. Click Submit to save your changes.

Shared Class Content Updates
In general, changes to question banks or assignments in the parent class automatically update the copies of the question banks or assignments in your child classes. However, if you edit and then save your copies of the inherited materials using their original names, you do not receive updates.

The following applies to changes you make to inherited question banks, whether you make changes to them individually using the Question Bank Editor or if you use Course Modules to make global changes that affect inherited question banks. (Course Modules are described in the next section.)

You break the link to the parent class version of the question bank, if you:

- Edit a parent question bank and then Save it using the original name as the parent class.
- Install a course module that has a new version of a question bank with the same name as a question bank in the parent class.

To refresh the content of your class to match that in the parent class or to restore the link to the parent class version of the content, you must do one of the following:

- Save your new, edited question bank under a different name and then delete the version that has the same (original) name as the original in the parent class question bank.
- Delete the edited/modified version of the question bank.

The system automatically restores the parent class version of the matching question bank.
5.5 Course Modules

Course Modules allow you to share your class content with others, including related assignments and web resources (for example, images) used by your questions and assignments.

When you create a course module, the system packages the class elements you have identified, producing a single, zip file that can be archived or redistributed to other instructors using the system.

Once a course module is distributed and installed in a new class location, it does not maintain any synchronization with the original source class or its materials.

Note: Inherited content is not included in child class course modules.
Creating a Course Module

To create a new course module:
1. From the Class Homepage, click Content Manager and select Course Modules.
2. Click Create.
3. Select the course components to include in your new course module.
   - A table displays all the question banks, assignments, and web folders with resources (for example, image files) for your class.
   - You can highlight multiple items in a list using Shift-click (for contiguous selections), CTRL-click (for multiple individual selections), or Select All.
4. Use the arrow button to add your selections to the list of included elements for your new course module.
   - You can include any combination of question banks, assignments, and web folders in your selected list.
5. To select web resources (for example, images and other files that are referenced by your question banks and assignments), select the folders that contain your resources. Subfolders are automatically selected.
6. When you are satisfied that the list on the right contains all the elements to include in your new course module, click OK.
7. Specify a name for your course module. Optionally, you can enter descriptions for each course component. You can also select descriptive names for any web folders you have selected. Question bank and assignment names cannot be changed.
8. Click OK to create your course module according to the specifications you have indicated. Notice that the new course module is added to the bottom of the list of installed course modules for your class.

   Note: Click Cancel at any time to return to the Course Modules Main Menu.

Exporting a Course Module

This is a required step for redistributing or installing your course into a new class.

To export a course module:
1. In the Course Modules main page, select the course module to save to your local machine by selecting the check box adjacent to it in the list of available modules in your class.
2. Click the Export button.
   - The next page displays the related URL information that is referenced in the course module you have selected. The following message about the URLs is displayed.
Your question banks are scanned for URLs beginning with the following strings. These references are replaced with a system-independent string that makes your module re-locatable to classes on other servers.

3. Click **OK** to continue. Typically you do not need to make changes to the system default behavior for URL replacements.
4. Click the link to download the course module.
5. Click **Return** to return to the Course Module main page.

When the file download/save operation is complete, you are returned to the **Course Modules** main menu.

**Importing and Installing a Course Module**

The advantage of using course modules to manage content between classes on one or more Maple T.A. servers is that the question banks, assignments, and web resource folders are entirely portable and can be installed in a new class very easily.

In the following discussion, the term **destination class** refers to the class in which to install the course module and the term **source class** refers to the originating class for the course module contents.

**To install a new course module into the destination class:**
1. Ensure that you have access to the saved course module from the source class on your hard drive, a network drive, or an Internet resource.
2. Click the **Import** button from the **Course Modules** main menu.
3. To select a course module, click **Browse**.
4. In the **Choose File** dialog, select the course module file on your hard drive, a network drive, or an Internet resource, and click **Open**.

   **Note:** The course module file must be in original zip format.

5. Click **Import** to initiate the file upload.

   Elements contained in your uploaded course for which names match elements previously contained in your class are highlighted in yellow background with red type, with a warning message:

   **WARNING:** The course module you have uploaded contains resources which will overwrite components that you already have installed. The components which will overwrite your existing course components are highlighted in the table below. If you do not want these course components erased and replaced with new ones, press Cancel, or ensure that they are not selected in the table below. To proceed, select the components that you want to install from the table below and press **Install**.
6. At this point you can install the new components in your class, overwriting the original components. You can also select or clear other elements of the course module for installation into your class. The default installation behavior is to install no course module elements; however, by selecting individual parts, you can choose the specific elements to install.

Click **Install** to copy and install all the selected course module elements into your destination class.

The new course module appears in the list of available course modules for your class, and all of the elements you selected appear in their respective areas throughout your class web site. Question banks are listed in the [Question Bank Editor](#), assignments appear in the [Assignment Editor](#), and web resources are displayed in the [Website Editor](#).

**Additional Notes**

The base class web site folder, `web_folders` is the most common element that is flagged as a duplicate. This is a common default destination for many web resources; however, because it is a folder name established for every course, you may already have saved your own resources to the class web site folder in the destination course. If this is the case, you can either:

- Create a new subfolder in your destination class web site and reinstall your resources in that subfolder.
- If you have access to the source class for the course module, you can return to the course module's source class and move the resources in the base folder of that class web site to a subfolder, and then recreate the course module so that it will not match with your destination class folders upon upload.

**Note:** If you change the location of your resources, make sure to update the reference to them in questions appropriately.

Ensure the following file and system requirements are met.

- The course module you upload must be in zip format.
- If you attempt to upload a zip file that is not a course module, the system generates the following error message and you must make another attempt:
  
  *This file does not appear to be a course module (it has no manifest file).*

- Each server has a maximum file size setting for uploads that is established by your system administrator. (The system default setting is to allow uploads of up to 2 MB.) If your file upload repeatedly times out,
or if you receive a message informing you that your upload exceeds the server limit, contact your system administrator.

Inheritance of Question Banks and Assignments

If you install a course module that has a new version of a question bank with the same name as the question bank in the parent class, you permanently break the link to the parent class version of the question bank.

To refresh the content of your class to match that in the parent class or restore the link to the parent class version of the content, you must do one of the following.

- Save your new, edited question bank under a different name.
- Delete the edited/modified version of the question bank.

The parent class restores the matching question bank automatically.

Note: If you modify question banks or assignments that you inherit from a shared parent class, there is no risk that the parent class version will overwrite your modified version, unless you specifically delete the modified question bank or assignment from your child class. This means that if you make changes to the inherited question banks or assignments and save them to the original name, your changed versions sever the relationship with the parent asset and you will not receive any future updates from the parent class automatically. Therefore, you must inform the instructor in your shared parent class if you want to be notified of changes to parent class question banks and assignments.
6 Additional Resources

6.1 Maple T.A. Content Center

The Maple T.A. Content Center contains free course modules and resources for download. Many topics are covered, for example, vector spaces, symmetric matrices, orthogonality and inner products, matrix algebra, optimization, DEs, functions and relations, rational expressions, inner product spaces and eigenspaces, and more.

To access Maple T.A. resources at the Maple T.A. Content Center:

1. In your browser, navigate to http://www.maplesoft.com/tacontent.
2. Select one of the predefined categories or enter a keyword or phrase on which to search.
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