

## Getting Started with PH GradeAssist

PH (Prentice Hall) GradeAssist is an online program for completing class assignments, practicing your skills, and taking tests.

PH GradeAssist makes it easy to:

- **Find assignments** – All assignments from your instructor are listed on the Class Home Page.
- **Complete assignments** – You can complete homework online, print assignments and then submit answers online, or print assignments and submit solutions by hand.
- **Practice** – Problems are based those in your Prentice Hall textbook. You'll be able to work multiple problems to build your skills.
- **Get feedback** – Feedback is immediate. You don't have to wait for your instructor to grade your homework.
- **Review your past performance** – You can review any assignments you've completed, and assignments you've started but have not yet completed.

*Note: Your instructor can control which of these options are available for any given assignment.*

## System Requirements

- PH GradeAssist runs properly on the following recommended combinations of operating systems, web browsers, and Java components.
- While other browsers and operating systems may work with PH GradeAssist, the configurations identified below are the recommended choices. Other configurations are not guaranteed to support all question types.
- To access the latest system requirement information, including any browser plug-ins that you may need to view or work with PH GradeAssist:  
Go to <http://www.prenhall.com/phga/>, select your discipline, click **Tune up your browser** under Student, and then test your system for each required plug-in.

	<b>Windows 98, 2000, &amp; XP</b>	<b>Macintosh OS X (10.3)</b>	<b>Linux Redhat 9</b>
<b>Web Browser</b>	Internet Explorer 6.0 Netscape 7.1 Mozilla 1.6	Safari 1.2.1	Netscape 7.1 Mozilla 1.6
<b>Java</b>	Microsoft JVM Java 1.4.2	Java 1.4.2	Java 1.4.2
<b>Required Settings</b>	<ul style="list-style-type: none"><li>• Use your browser's default settings.</li><li>• Ensure that JavaScript is enabled in your browser.</li><li>• Your browser must support Java and Java support must be enabled.</li><li>• Make sure that your browser is set to accept cookies and popups from the server.</li></ul>		

## Before You Begin

To access PH GradeAssist you need to register. After you register, you can log in to your Class Home Page URL.

Before you register and log in for the first time, gather the following information:

### **Student access code**

To register, you need a student access code. You received a student access code when you purchased this product. It can be found beneath the pull tab on the inside card cover of the printed version of the Student Quick Start guide. A student access code looks like this:

NANTW-FORRM-TIGON-BLASE-PENCL-COLAM

***Important:** Each student access code is nontransferable and can be used by only one student. If you did not purchase this product as a new item, the access code may already have been used. In this case, you need to purchase a new PH GradeAssist Student Quick Start Guide.*

### **A valid email address**

To register, you need a valid email. Your registration confirmation and other important information will be sent to the email address you provide.

### **Class ID**

To log in, you will need your Class ID. Get this from your instructor.

## Registering

1. Go to <http://www.prenhall.com/phga/>

**Important:** If your school has installed PH GradeAssist on a campus server, your instructor will give you a different URL for registration and your process will vary from the steps provided here. If needed, contact your instructor for more information.

2. Select your discipline.
3. Under Student, click **Register/Login** under Student or, if listed, click the name of the textbook for your course.
4. In the top gray box on the right, click the **REGISTER** link.

**PHGA Student Registration/Login Page** presented by BROWNSTONE

Have you redeemed your Student Access Code? If not, click the link on the right to register. The Student Access Code is found in your Student's Quick Start Guide that accompanies your textbook.

**Step 1:**  
First REGISTER with Prentice Hall using your Student Access Code. When you have created a Login and Password, use them in the Login box below.

**Step 2:**  
Enter your login and password.  
Login:   
Password:

**Step 3:**  
Enter the Class ID you got from your instructor  
Class ID: <http://phga.pearsoned.com/phga2/classess/>   
Don't know your class ID? [Click here](#)

Forgot Your Login Name or Password? If you can provide either your login name or the email address that matches your account information, you will then be prompted to answer a personalized verification question. If you answer the question correctly, an email containing your login name and password will be sent immediately to the email address on record for you. Otherwise, contact [Online Product Support](#).

Your instructor should have provided you with a class ID code to select your class on the system. If you do not have a class ID code, either:

1. contact your instructor
2. search for your class ID code by selecting the "Don't know your Class ID?" link at the right.

## Providing Access Information

- **Do you have a Pearson Education account?**
  - If so, click **Yes, Look Me Up**. Type your existing login name (or User ID) and password that you have used for other online products or websites that accompanied a textbook published by a Pearson Education company, whether Addison-Wesley, Allyn & Bacon, Benjamin Cummings, Longman, or Prentice Hall.
  - If not, leave **No, I Am a New User** selected. You will create a login name and password later in this process.

**No, I Am a New User**  
 **Yes, Look Me Up**  
 Login Name  
  
 Password  
  
[Forgot your Login Name/Password?](#)

- **Access Code** – Pull back the tab on the inside of the card to reveal your student access code. Then type your six "word" student access code, one word in each box. Don't type the dashes.

\*Access Code  
 simple - frill - ton - - -

*Note: Once you use this code for registration, you will not need the code any longer.*

- **School Location** – Entering your school's Zip or postal code helps create a list of schools in your area for you to choose from in a later registration step. Select the country where your school is located, then click **Next**.

<b>* School Zip or Postal Code</b> <input type="text"/> <a href="#">Need help finding your school's zip/postal code?</a>
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### Providing Account Information

- **Personal Information** – Enter your name and a valid email address that you check on a regular basis. If the boxes are prefilled on this page, check that the information is current.

<b>*E-mail Address</b> <input type="text" value="myname@mycollege.edu"/>
---

*Note: Your registration confirmation and other important information will be sent to the email address you provide.*

- **School Information** – Select your school from the dropdown list. If your school is not on the list, scroll to the bottom of the list and select **Other**. Then, enter your school's name, city, and state in the appropriate boxes.
- **Login Name and Password** – Enter your desired login name and password. Choose something you can remember but you don't think that anyone else would request. You may want to use your email address as your login name.

<b>*Create a Login Name</b> <input type="text"/>
<b>*Create a Password</b> <input type="text"/>
<b>*Re-type Your Password</b> <input type="text"/>

*Note: Do not use blank spaces. Once you are registered, you will receive an email confirming your login name and password.*

- **Security Question** – Select a security question and enter its answer.
- **License Agreement and Privacy Policy** – Click **license agreement** and **privacy policy** to read this information.
- Click **Next** (only once!) to submit your registration for processing, which will take just a few moments.

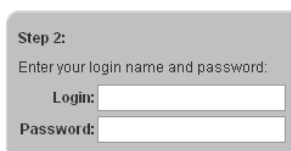
### Confirmation & Summary

A confirmation page informs you that your student registration is complete and that you will receive a confirmation email.

- (Optional) Print the Confirmation & Summary page to keep a record of this information.
- Click **Log In Now** to continue.

### Logging in for the First Time

1. Click **Student Login**.
2. From the PHGA Student Registration/Login page, complete Step 2 in the gray box by entering your login and password (that you created during registration).

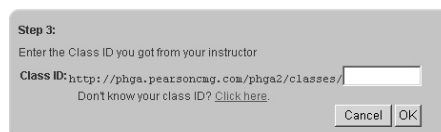


Step 2:  
Enter your login name and password:

Login:

Password:

3. Complete Step 3 by entering your Class ID in the provided box (get this from your instructor).



Step 3:  
Enter the Class ID you got from your instructor:

Class ID: <http://phga.pearsoncmg.com/phga2/classes/>

Don't know your class ID? [Click here.](#)

Cancel OK

**Note:** If you don't yet have the Class ID, you can search by clicking the link for "Don't know your class ID?"

4. Click **OK**. When your Class Home Page appears, add this page as a favorite or bookmark to your browser.

## Your Class Home Page

Your Class Home Page is your starting point each time you work with PH GradeAssist. You can find all of your assignments—homework, practice work, and tests—on the Class Home Page.

**Your Class**  
Financial Accounting 201  
BOSTON COLLEGE

**Instructor**  
Tasha Conrad (tconrad@bc.edu)

Assignment Name	Points	Type	Availability
Pre-Test	100	Homework/Quiz	Unlimited
Chapter 1 quiz	100	Homework/Quiz	Unlimited
Chapter 2 quiz	100	Homework/Quiz	Unlimited

### Selecting an Assignment and Logging In

To access your Class Home Page, follow the instructions below. Method 1 is preferred over Method 2.

#### Method 1

Your instructor can provide you with the URL for your Class Home Page.

1. Go to the URL for your Class Home Page. For example:  
<http://phga.pearsoncmg.com/phga2/classes/finacct201/>

***Tip:** Add this page as a favorite or bookmark to your browser so you can easily access it in the future.*

2. Click the name of an assignment.
3. Enter your login and password and click **Enter**, if prompted.

***Congratulations!** You are now registered, logged in, and ready to work with PH GradeAssist.*

**Method 2**

1. Go to the main Prentice Hall GradeAssist website at <http://www.prenhall.com/phga/>.
2. Select your discipline.
3. Under Student, click **Register/Login** or, if available, click the name of the textbook for your course.
4. In the Step 2 gray box, type your login and password.

*Note: You can skip Step 1 because you have already registered.*

5. In the Step 3 gray box, enter your Class ID and click **OK**.  
The Class Home Page for your course opens.
6. Click an assignment's name to begin working on it.

***Congratulations!*** You are now registered, logged in, and ready to work with PH GradeAssist.

**For More Information**

For more information on how to use PH GradeAssist, go to <http://www.prenhall.com/phga/>, select your discipline, and download the remaining chapters of this student guide:

- *Chapter 2, "Completing Assignments"*
- *Chapter 3, "Entering Math Expressions in Assignments"*

# Chapter 2

## Completing Assignments

Your instructor posts your assignments on the Class Homepage for your course. These assignments can range from practice work you can complete at your own pace to proctored exams.

Let's look first at the types of assignments you might be asked to complete. The steps for completing assignments, grading your work, and reviewing past assignments results come next.

### What types of assignments will I complete?

Your instructor creates assignments by selecting an assignment type and setting options. PH GradeAssist lets your instructor decide, for example, how many times you can take an assignment, whether you can return to earlier questions, the time limit for the assignment (if any), and whether you must complete the assignment in a proctored environment.

There are four primary types of assignments you will find on your Class Homepage:

- Practice assignments
- Homework or quizzes
- Proctored exams
- Mastery assignments

### Practice assignments

Practice assignments let you master skills on your own. You typically can take practice assignments repeatedly, though your instructor can limit the number of retakes. Each time you open the assignment, PH GradeAssist changes the problems slightly to present new challenges.

<b>Do I have to log in?</b>	No.
<b>Is my work graded?</b>	No.
<b>Can my instructor set a time limit?</b>	No.
<b>Can I return to earlier questions in the assignment?</b>	Yes.
<b>Can I retake the assignment?</b>	Yes.
<b>Can I quit and start again?</b>	Yes.

*Note: You can view results from practice assignments only during the same browser session. To retain your results, print the performance report as soon as you complete the assignment.*

## Homework or quizzes

Your results from any homework or quiz assignment are automatically recorded in the gradebook. Your instructor might let you retake this type of assignment for practice or to improve your grade.

<b>Do I have to log in?</b>	Yes.
<b>Is my work graded?</b>	Yes.
<b>Can my instructor set a time limit?</b>	Yes. You see a warning if you are approaching the time limit.
<b>Can I return to earlier questions in the assignment?</b>	Yes.
<b>Can I retake the assignment?</b>	Yes. The number of times you can retake the assignment depends on your instructor. Your instructor can also set a deadline after which your best grade will be recorded in the Gradebook.
<b>Can I quit and start again?</b>	Yes, but make sure you are aware of any deadline for completing the assignment.

## Proctored exams

Proctored exams are the highest stakes assignments you complete in a course. Your instructor determines how the class proctor verifies your identity:

- The proctor verifies your identity and authorizes assignment access before you start the test and *again* after you have completed it (before grading).

*or*

- The proctor provides authorization after you complete the test but before it is submitted.

<b>Do I have to log in?</b>	Yes.
<b>Is my work graded?</b>	Yes. Unlike quizzes and homework, you might have to wait for your instructor to provide your grade.
<b>Can my instructor set a time limit?</b>	Yes. You see a warning if you are approaching the time limit.
<b>Can I return to earlier questions in the assignment?</b>	Yes.
<b>Can I retake the assignment?</b>	No.
<b>Can I quit and start again?</b>	No.

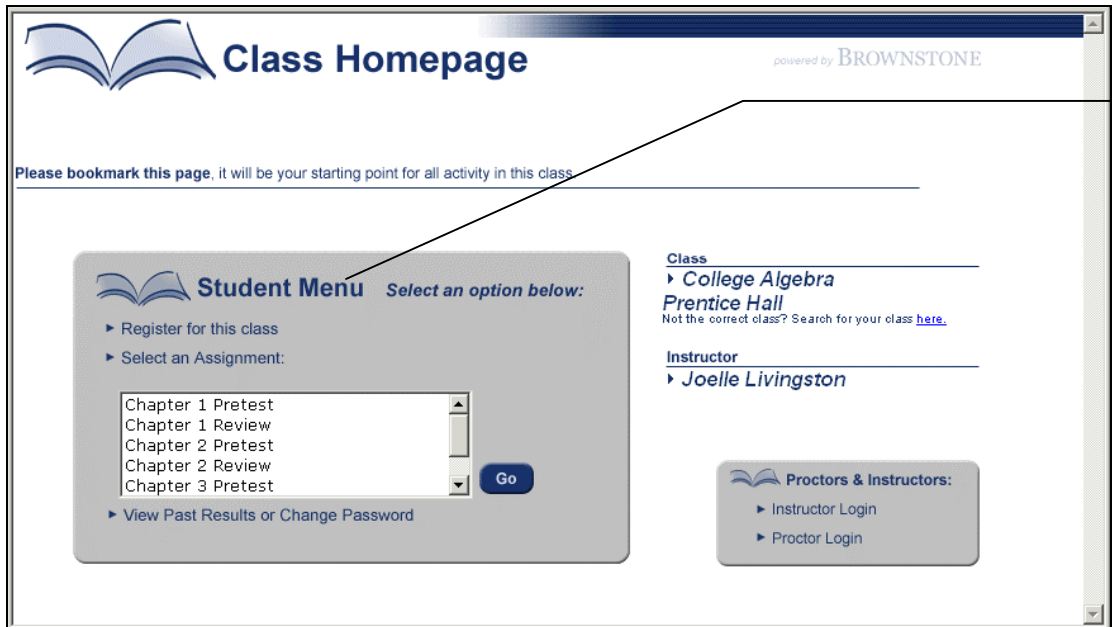
## Mastery assignments

Mastery assignments are called Mastery Dialog assignments. You must demonstrate mastery at each step in the assignment by correctly answering a certain number of questions. When you demonstrate the required level of mastery for a given learning objective, you can progress to the questions associated with the next learning objective.

<b>Do I have to log in?</b>	Yes.
<b>Is my work graded?</b>	Yes.
<b>Can my instructor set a time limit?</b>	Yes. You see a warning if you are approaching the time limit.
<b>Can I return to earlier questions in the assignment?</b>	No. You complete one question at a time. PH GradeAssist displays feedback after you complete each question. If you repeatedly answer a question incorrectly, you might be redirected to study material.
<b>Can I retake the assignment?</b>	No.
<b>Can I quit and start again?</b>	No.

## Selecting an assignment

You select all assignments from the Student Menu on the Class Homepage:



The screenshot shows the 'Class Homepage' interface. At the top left is a logo of an open book and the text 'Class Homepage'. To the right, it says 'powered by BROWNSTONE'. Below the header, there is a message: 'Please bookmark this page, it will be your starting point for all activity in this class'. The main content area is divided into two sections. On the left is the 'Student Menu' with the instruction 'Select an option below:'. It contains three main options: 'Register for this class', 'Select an Assignment:', and 'View Past Results or Change Password'. The 'Select an Assignment:' option is expanded to show a list of assignments: 'Chapter 1 Pretest', 'Chapter 1 Review', 'Chapter 2 Pretest', 'Chapter 2 Review', and 'Chapter 3 Pretest'. A 'Go' button is located to the right of this list. On the right side of the page, there are sections for 'Class' and 'Instructor'. The 'Class' section shows 'College Algebra' and 'Prentice Hall' with a link to search for a class. The 'Instructor' section shows 'Joelle Livingston'. At the bottom right, there is a 'Proctors & Instructors' section with links for 'Instructor Login' and 'Proctor Login'. A line from the text 'Student menu' on the right points to the 'Student Menu' box.

To select an assignment:

1. Click the assignment name, and then click **Go**.
2. If prompted, enter your login name and password.

*Note: If you forget your login name or password, click the link provided for help.*

3. Click **Enter**.

## Navigating in an assignment

After you select an assignment, you see a window such as the one shown here:

The screenshot shows a web interface for a "Graded Session - Credit Awarded" powered by BROWNSTONE. The interface includes navigation buttons: BACK, NEXT, JUMP TO: (with a dropdown menu), GRADE, HELP, and QUIT. The assignment title is "College Algebra, Chapter 1 Pretest". In the top right corner, it indicates "Question 1 of 1" and "Remaining time: Unlimited".

**Question 1: (1 point)**  
 A water trough 7 ft long has a cross section that is an equilateral triangle with edges 1 ft long. If the trough is full of water (density  $\rho = 62.4 \text{ lb / ft}^3$ ), find the force (lb) exerted by the water on one end of the trough.

Express your answer to an accuracy of at least one decimal place.  
 Do *not* include units in your answer.

Below the question is an empty text input box.

At the bottom, it states "This question accepts numbers or formulas." and provides links for "Help", "Change Math Entry Mode", and "Preview".

This page provides a range of information about the assignment you are completing, for example:

- Course name and assignment name
- Number of questions in the assignment and time limit:

Question 1 of 10  
 Remaining Time: 29 minutes

- Whether the assignment is graded:





To enter your answer to a question:


4. Click in the answer box and type your answer.
5. (Optional) Click **Preview** to check any mathematical expressions you have entered in your answer.

*Note: For more information on entering expressions, see Chapter 3, "Entering Math Expressions in Assignments."*

To navigate in the assignment, do any of the following:

- Click  to move to the next question. Do *not* use the browser's Forward key.
- Click  to return to a previous question. Do *not* use the browser's Back key.
- Click the arrow next to **Jump To** and select the question you want to view.

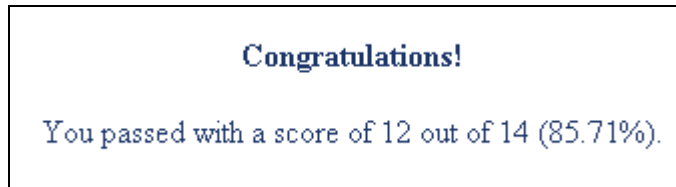
## Grading your assignment

When you are finished with the assignment, click . PH GradeAssist displays your results. Your instructor determines the amount of feedback provided.

*Note: You may not be able to see the results from a proctored exam until your instructor releases the grades.*

Feedback includes:

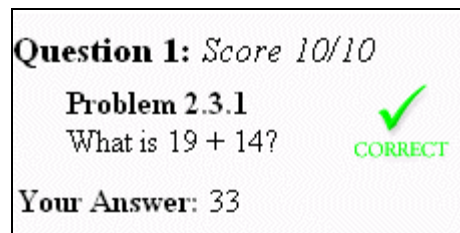
- Summary of your performance. If your instructor has set a passing score, such as 11 out of 14 questions answered correctly, PH GradeAssist indicates whether you passed or failed:





- Points received on each question, for example:

Question	Points Earned	Points Available
<a href="#">Question 1</a>	10	10

To view details of your performance, click  or the link to a question in the assignment. For each question, you see the following information:



- To return to the grade summary, click .
- To exit the assignment and return to the Class Homepage, click .

## Quitting and restarting an assignment

Depending on the assignment type and the options set by your instructor, you might be able to exit an assignment and return to it at a later time. You might also need to return to an assignment if you lose your Internet connection.

To exit an assignment, click . PH GradeAssist saves your work.

When you next log in, you can choose whether to complete the unfinished assignment or start a new one. Either way, your previous work is saved.

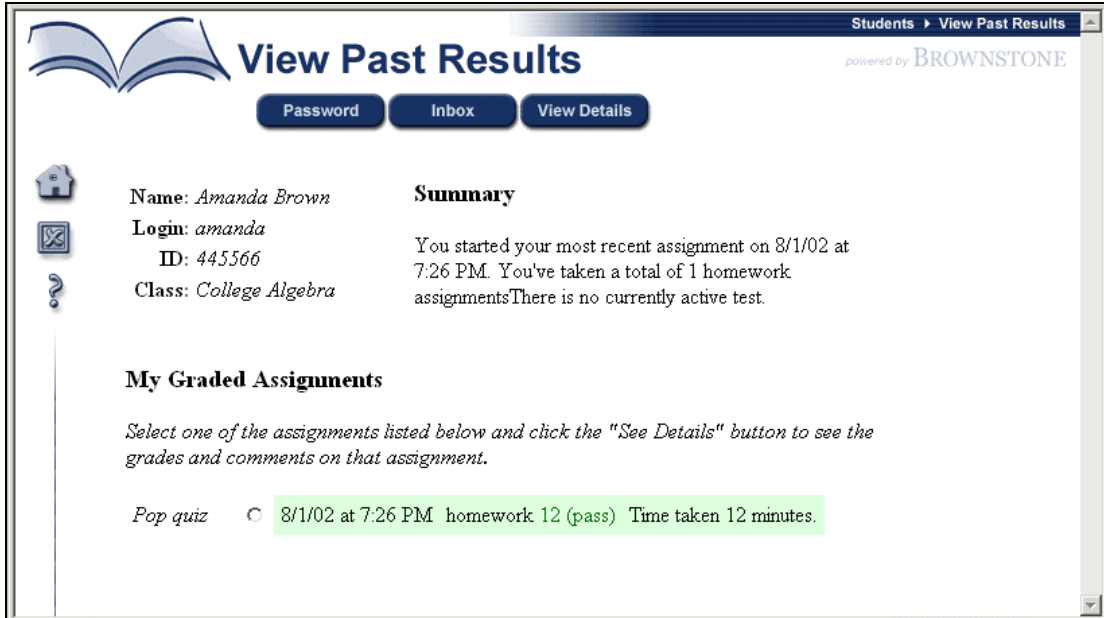
*Note: Remember that your instructor can set an end date for an assignment. If you do not return to the assignment before the end date, you will receive no credit.*

## Viewing past assignment results


To view past assignment results:




1. On the Class Homepage, click **View Past Results or Change Password**.
2. Enter your login name and password.
3. Click Enter.

The View Past Results page opens:



The screenshot shows the 'View Past Results' page. At the top, there is a navigation bar with 'Students' and 'View Past Results'. Below this, there are three buttons: 'Password', 'Inbox', and 'View Details'. On the left side, there is a sidebar with a home icon, a login icon, and a help icon. The main content area displays the user's profile information: Name: Amanda Brown, Login: amanda, ID: 445566, and Class: College Algebra. Below this is a 'Summary' section with the text: 'You started your most recent assignment on 8/1/02 at 7:26 PM. You've taken a total of 1 homework assignments. There is no currently active test.' Underneath is a section titled 'My Graded Assignments' with a note: 'Select one of the assignments listed below and click the "See Details" button to see the grades and comments on that assignment.' A single assignment is listed: 'Pop quiz' with a radio button, '8/1/02 at 7:26 PM homework 12 (pass) Time taken 12 minutes.' A 'View Details' button is positioned to the right of the assignment listing.

4. Do any of the following:
  - View the summary information provided, including a list of assignments you have partially completed.
  - Click the circle next to a test's listing, and then click  to review your performance on that test.

- Click  to return to the Class Homepage.
- Click  to exit PH GradeAssist.
- Click  to access online Help for PH GradeAssist.

# Chapter 3

## Entering Math Expressions in Assignments

PH GradeAssist makes it easy to enter math expressions in your assignments. Here are two examples of questions that require expressions in the answers:

**Question 1: (1 point)**

Set up and simplify the integral of the form  $\int_a^b f(x) dx$  that gives the length of the arc  $y = x^{5/2}$ ,  $1 \leq x \leq 3$ .

For an answer of the form  $\int_a^b f(x) dx$ , with  $a < b$ , enter **(f(x),a,b)**.

PH GradeAssist provides tools to display math expressions, let you enter math expressions, and evaluate your responses to questions. The first time you need to load one of the math tools, the system begins a download and tells you how long you can expect to wait (if at all). Any time you use a math tool after that, PH GradeAssist uses the stored copy of the tool, so there should be no delay.

As you answer questions, PH GradeAssist lets you enter math expressions in either text mode or symbol mode. You can change modes on a question-by-question basis.

*Notes:*

- *For helpful hints on entering math expressions, see the “Avoiding common entry errors” section later in this chapter.*
- *For information on entering mathematical functions, operations, and units, see the section “Entering functions, operations, and units” at the end of the chapter.*

## Choosing text mode or symbol mode

There are two modes for answering math questions:

- In **text mode**, you enter your answer on a single line using syntax similar to a graphic calculator. You can click **Preview** under the answer box to ensure that the system can interpret your answer. When you open an assignment, you are automatically in text mode.
- In **symbol mode**, you enter formulas in an editing window, select algebraic symbols and operators from a toolbar, and see your expressions in standard mathematical layout as you type.

You can switch modes as you work through an assignment. To do so, click **Change Math Entry Mode**, make your selection, and then click **OK**:



**Change Math Editor Mode:**

Symbol Mode     $\frac{x^2}{y}$   
 Text Mode     $(x^2) / y$

**Note:** Your change will take effect with the next question you view.

Note that the mode will change for the *next* question you view. To use the new mode in the current question, move backward or forward in the assignment and then return to the question.

PH GradeAssist displays all the answers you enter for an assignment in the current mode. For example, if you enter the answers for questions 1 through 5 in text mode, switch to symbol mode and return to question 2, your answer to question 2 appears in symbol mode.

**Important:** Use the  and  buttons to move among the assignment's questions. Doing so ensures the system reloads the questions using your current entry mode. Do **not** use your browser's Next or Back buttons.

As you review questions after switching from symbol mode to text mode, you may notice that the system has inserted additional parentheses. Do not be concerned. The parentheses result from the method used to convert symbolic syntax to text; they do *not* affect how your answers are interpreted when they are graded.

## Text mode

To enter math expressions in text mode:

1. Click in the answer box.
2. Type your formula using standard mathematical notation.

For example, the system will recognize the following expressions:

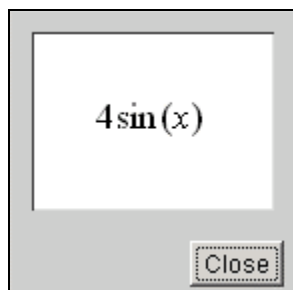
$$2x^3-4x+3$$

$$4\sin(x)$$

$$(x^2-1)e^{(4x+3)}$$

*Note:* Be sure to use parentheses correctly. For example, if you mean to type  $1/(x+1)$  but instead enter  $1/x+1$ , your answer will be interpreted as  $(1/x)+1$ .

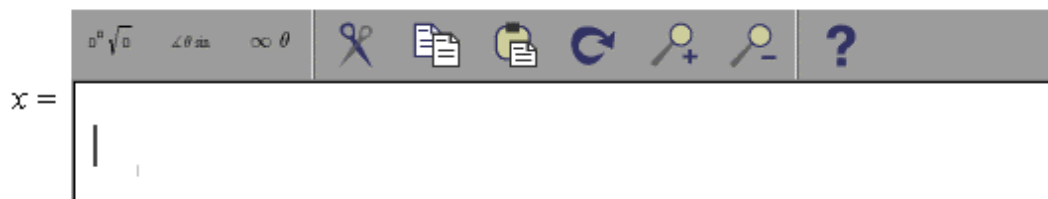
3. Click **Preview** to ensure your answer will be correctly interpreted.



## Symbol mode

The symbol mode toolbar you use is a customized version of Design Science's WebEQ® technology, which is the web standard for math editing and display. As a result, you may see a prompt to download and install the WebEQ software as you prepare to work on an assignment. To use symbol mode, click **Yes** to accept the download and then wait until you see a message indicating that the WebEQ download was successful.

PH GradeAssist detects when your assignment contains questions suitable for symbol mode. When you switch to symbol mode after a successful WebEQ installation, you see an answer entry box like this for each question:



You are now ready to build and edit formulas in symbol mode.

## Building formulas

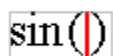
Click any of these three icons to select layout or trigonometry functions:





Select the symbol or function you want from the palette that appears. You can enter part of your answer manually, if you want, and then use the palette for the rest.

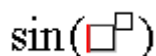
For example, to enter  $\sin(x^{10})$ , you could perform these steps:

1. Enter  $\sin()$  in the entry box:



*Note: Note the red line in the equation. This is the current location of the cursor. Instead of manually entering  $\sin()$ , you could also click the second icon on the toolbar and select  $\sin()$  from there.*

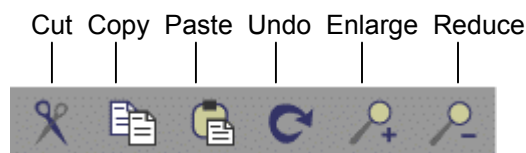
2. Click the  icon and select the rightmost option from the palette . Here is the result:



*Note: Now the cursor is in the lower textbox within the parentheses.*

3. Type **x**.
4. Move the cursor to the small exponent box by either clicking in it or pressing the right arrow key on your keyboard.
5. Type **10**.

Here are the functions of the remaining icons on the toolbar:



For example, to be sure your cursor is in the right location, you could increase the size of this equation:



by clicking :



*Note: Your instructor can also build a custom toolbar with the symbols you need to complete specific assignments.*

## Editing formulas

To edit a formula in symbol mode, use the left, right, up, and down arrows. The red cursor moves through the components of your formula. For example:

- Press the right arrow key to move from the  $y$  in  $y^2$  to the  $^2$ .

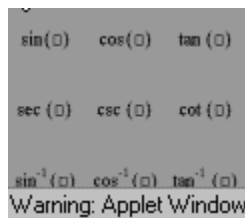
- Press the down arrow key to move from the top to the bottom of a fraction.
- Press the right arrow key repeatedly to move to the end of the expression to add another term to it.

You can also use keyboard commands to perform some of the functions in the symbol palettes. For example:

- Type ^ (caret symbol) for superscript.
- Type % (percent sign) for a fraction.
- Type # (pound sign) for a square root.
- Type \* (asterisk) to produce a multiplication sign.
- Press the space bar to represent multiplication.
- Type / (slash) to produce a division sign.
- Press ALT+P to type the Greek letter Pi.

## Working with WebEQ

You might see the following error message as you work with the symbol palettes:



You can still select symbols even while the error message is displayed. To avoid the error message, be sure to download and install the PH GradeAssist math package at the start of your first assignment.

## Avoiding common entry errors

Whichever mode you are using, remember the following:

- **Variable names** – You can use any letter for a variable letter, but you should always use the same letter that is used in the question. If the question asks you for  $(t+1)^2$ , the answer  $(x^2+2x+1)$  would be graded as wrong. Also, the system is case sensitive. If you type T rather than t, your answer would be graded as wrong.
- **Multiplication** – You can type \* (asterisk) for multiplication, or just type a letter and a number together, as in  $2x$ . If you have a product between two variables, for example  $x$  and  $y$ , you must type  $x*y$  or  $x y$  (with a space in between). If you type  $xy$ , the system interprets this as a single variable with the name  $xy$ . The variable  $xy$  would be in bold text, while  $x$  times  $y$  would be in italics.
- **Exponents** – Use the ^ (caret) for exponentiation, and use the letter  $e$  for  $2.718$ . For example,  $e^x$  is an exponential function.
- **Scientific notation** – Use an uppercase  $E$  for scientific notation in numeric expressions, for example,  $2.58E5 = 2.58 \times 10^5$ .

- **Pi** – In symbol mode, press Alt+P for Pi or select it from the toolbar of the answer entry box. In text mode, type **Pi**.
- **Trigonometric functions** – The names for common mathematical functions, such as sin, cos, and tan, are just what you would expect. The inverse trigonometric functions are arcsin(x), arcos(s), and arctan(x). Also, all trigonometric functions are set to work in radians.
- **Square roots** – In text mode, the square root function is sqrt(x), although you can also type  $x^{1/2}$  or  $x^{0.5}$ . In symbol mode, use the keyboard shortcut # (pound sign) for square root, or select the symbol from the toolbar of the answer entry box.
- **Argument of functions** – Place the argument of a function in parentheses. For example, type **sqrt(3x)**, not **sqrt 3x** (which would be interpreted as  $(\sin(3))^*x$ ).

## Entering functions, operations, and units

Use the following table to help you enter math expressions.

Arithmetic		Numbers	
+	Addition	e	2.71828...
-	Subtraction	pi	3.14159...
*	Multiplication	2.9E8	Scientific notation: 290,000,000
/	Division		
^	Exponential		
Trigonometric Functions		Functions	
sin	Sine	sqrt	Square Root
cos	Cosine	log	Logarithm base 10
tan	Tangent	ln	Natural Logarithm
arcsin	Inverse Sine	abs	Absolute Value Function
arccos	Inverse Cosine		
arctan	Inverse Tangent		
sec	Secant		
csc	Cosecant		
cot	Cotangent		

*Note: For information on the units you can include in math expressions, see the PH GradeAssist Student Help.*