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Release Notes

Release notes describe new features and resolved issues for each release.

January 5, 2012 Release Notes
This release focused on the Previous Answers page, eBook access during the grace period, and improvements to how some students purchase WebAssign access. Some functionality was available on January 3.

Previous Answers Page Redesign
The Previous Answers page was redesigned and displays all the answers submitted by a student for an assignment question. The Previous Answers page lists the answers that were submitted each time by the student and indicates if question values were re-randomized. This redesign addresses a number of known issues with the previous version of this page.
This page is available after students have made more than one submission only if enabled by the instructor in the assignment settings. See Previous Answers Page on page 87.

eBook Access During Grace Period
Depending on the publisher, some eBooks will now be available to students during the grace period. For more information, see Purchasing WebAssign Access and eBooks on page 12.

Purchasing Workflow Improvements
Some students accessing WebAssign through another system, such as Blackboard or a school Web site, previously had difficulty purchasing WebAssign access. The purchasing workflow has been improved so students logging in from other systems do not need to log in to WebAssign directly in order to complete their purchase.
Students who log in to WebAssign directly will not notice any changes. For more information, see Purchasing WebAssign Access and eBooks on page 12.

**Improved Help Links**

Help topics for mathPad, calcPad, physPad, chemPad, marvinSketch, and graphing tool now open pages in the student help system to facilitate finding additional help information.

**Enhanced Communications Views**

Private Messages, Ask Your Teacher Messages, and messages in the Trash now display a short 100-character summary of a message's contents.

**New Content**

The following textbooks are available in WebAssign as of January 6.

**Mathematics**

- Aufmann, Lockwood, Nation, and Clegg, *Mathematical Excursions 3e*
- Aufmann and Lockwood, *Beginning Algebra 8e*
- Aufmann and Lockwood, *Intermediate Algebra 8e*
- Aufmann and Lockwood, *Mathematics with Allied Health Applications 1e*
- Aufmann and Lockwood, *Course Companion for Basic Math 1e*
- Berresford, *Applied Calculus 6e*
- Berresford, *Brief Applied Calculus 6e*
- Clark and Anfinson, *Beginning & Intermediate Algebra: Connecting Concepts Through Applications 1e*
- Fierro, *Mathematics for Elementary Teachers 1e*
- Green, *Workbook for the Accuplacer and Compass Mathematics Exam 1e*
- Gustafson and Hughes, *College Algebra 11e*
- Harshbarger and Reynolds, *Math Applications 10e*
- Kaufmann, *College Algebra 8e*
- Larson, *Calculus: An Applied Approach 9e*
- Larson and Hodgkins, *College Algebra with Applications for Business and the Life Sciences 2e*
- Larson and Hodgkins, *College Algebra and Calculus: An Applied Approach 2e*
- Larson, Edwards, and Falvo, *Elementary Linear Algebra 7e*
- McKeague and Turner, *Trigonometry 7e*
- Smith, *Mathematics: Its Power and Utility 10e*
- Stewart, *College Algebra 6e*
- Stewart, Redlin, and Watson, *Trigonometry 2e*
Resolved Issues

The following reported issues have been resolved since the previous release.

<table>
<thead>
<tr>
<th>Issue Summary</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students were awarded conditional points for early assignment submission when their submission occurred after the specified date.</td>
<td>SWAT-362, FTWO-79</td>
</tr>
<tr>
<td>Students were able to receive credit for submitting blank responses for chemistry questions that used the JME editor.</td>
<td>SWAT-345</td>
</tr>
<tr>
<td>MarvinSketch was not correctly grading ordered resonance structures.</td>
<td>SWAT-4</td>
</tr>
<tr>
<td>MarvinSketch did not recognize answer orientation for stereochemistry questions.</td>
<td>FTWO-522</td>
</tr>
<tr>
<td>Personal Study Plan scores were sometimes incorrectly omitted from the WebAssign Gradebook.</td>
<td>FONE-835</td>
</tr>
<tr>
<td>Clicking the update button for the advanced conditional points at the assignment level did not make the pop up window close.</td>
<td>SWAT-72</td>
</tr>
<tr>
<td>eBook links were displaying incorrectly for some textbooks.</td>
<td>SWAT-328</td>
</tr>
<tr>
<td>Read It buttons were not showing up properly for some students.</td>
<td>SWAT-224, SWAT-28, SWAT-261</td>
</tr>
<tr>
<td>Mathematical and other symbols were not displayed in some assignments. This occurred for assignments that displayed many different symbols in the student view.</td>
<td>SWAT-26, FONE-933, FONE-1027</td>
</tr>
<tr>
<td>Granting secondary textbooks to classes was granting invalid refunds.</td>
<td>SWAT-137, SWAT-286</td>
</tr>
<tr>
<td>Issue Summary</td>
<td>Notes</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>The pop-up messages for eBook and Personal Study Plan icons that explain more information about these features were not appearing in applicable products.</td>
<td>SWAT-267</td>
</tr>
<tr>
<td>High school students could not purchase homework-only access to Brooks/Cole 2012 textbooks.</td>
<td>SWAT-337</td>
</tr>
<tr>
<td>Students were unable to submit work after logging in to WebAssign in another browser tab.</td>
<td>FONE-1085</td>
</tr>
<tr>
<td>Students were able to enroll in courses that had been trashed.</td>
<td>FTWO-124</td>
</tr>
<tr>
<td>A student could not use the an access code to access a book in different courses during the same semester.</td>
<td>SWAT-14</td>
</tr>
<tr>
<td>Question parts were numbered incorrectly in student assignments for questions with pop-up tutorials.</td>
<td>FONE-541</td>
</tr>
<tr>
<td>Some formatted notation created with the &lt;watex&gt; tag was displayed too small in student assignments.</td>
<td>FONE-28</td>
</tr>
<tr>
<td>Students lost work when clicking Submit buttons manually added to a small number of WebAssign and instructor-created questions using the &lt;SUBMIT&gt; tag.</td>
<td>FONE-29</td>
</tr>
<tr>
<td>Submissions using the standard Submit button were unaffected.</td>
<td></td>
</tr>
<tr>
<td>Some tutorial links did not work in Internet Explorer.</td>
<td>FONE-821, FONE-745</td>
</tr>
<tr>
<td>ChemPad was not working properly in Tutorial questions.</td>
<td>SWAT-373</td>
</tr>
</tbody>
</table>

**October 8, 2011 Release Notes**

This release focused on addressing reported issues affecting students. No new features were added in this release.
## Resolved Issues

<table>
<thead>
<tr>
<th>Issue Summary</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete rollover text was not displayed for all marks, especially when best grading was used.</td>
<td>FONE-18</td>
</tr>
<tr>
<td>A server error occurred when viewing previous answers for a file upload question. This occurred only when multiple submissions were made.</td>
<td>FTWO-184, FTWO-264</td>
</tr>
<tr>
<td>Students saw incorrect marks in the question score grid for questions that were worth 0 points.</td>
<td>FONE-11</td>
</tr>
<tr>
<td>The displayed time remaining was incorrect as students opened timed assignments, and did not match the correct time displayed by the timer in the assignment.</td>
<td>FONE-20, FONE-21, FONE-827</td>
</tr>
<tr>
<td>Answer keys were incorrectly shown for graded “inline” tutorial questions after the due date without the student clicking View Key.</td>
<td>FONE-23</td>
</tr>
<tr>
<td>The student's last response was not displayed for mathPad, calcPad, and physPad questions. This occurred for assignments set to display the most recent response.</td>
<td>FONE-16</td>
</tr>
<tr>
<td>The help link on the Responses page did not work.</td>
<td>FTWO-118</td>
</tr>
<tr>
<td>Question feedback bubbles were too big when containing long feedback content.</td>
<td>FONE-25</td>
</tr>
<tr>
<td>Question feedback bubbles now display a scrollbar when needed.</td>
<td></td>
</tr>
<tr>
<td>In Firefox 3.6 through 5, assignments displaying one question at a time incorrectly displayed NumberLine questions below the current question.</td>
<td>FONE-15</td>
</tr>
<tr>
<td>Marks did not always change to indicate when the student changed an answer after it was graded.</td>
<td>FONE-19</td>
</tr>
<tr>
<td>Marks still do not indicate when the student has changed an answer for chemPad questions.</td>
<td></td>
</tr>
<tr>
<td>For students, the assignment page title did not display the assignment name.</td>
<td>FONE-14</td>
</tr>
</tbody>
</table>
**Issue Summary**

<table>
<thead>
<tr>
<th>Notes</th>
<th>FONE-24</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Accordion&quot;-style multiple part questions were always displayed with all sections expanded after each submission. WebAssign did not remember which sections the user opened or closed.</td>
<td>Each browser remembers the opened and closed sections independently. If you open the assignment in a new browser, all sections of “accordion” questions will be expanded at first.</td>
</tr>
<tr>
<td>An extra question part number was incorrectly displayed for mathPad, calcPad, physPad questions after the last submission.</td>
<td>FONE-17</td>
</tr>
<tr>
<td>Some header sections on the Responses page were misplaced.</td>
<td>FTWO-179</td>
</tr>
</tbody>
</table>

**Features Introduced in Older Releases**

Some features were introduced in releases before October 2011.

**August 2011**

The contents of the Student Online Help and Student Guide PDF have been reorganized to help you quickly and easily locate the information you need.

**June 2011**

**New Randomization**

If enabled, you are able to try a question again with new randomized values after using the number of submissions allowed by your instructor with the current randomized values. In order to receive a new randomization you must use the New Randomization button. The number of submissions you have available for each randomization, as well as how you are able to submit answers, is described in the Assignment Submissions section at the top of an assignment. For more information, see New Randomization on page 81

**New Scoring Features**

- Your answers can now be scored based on either your best answer for each question, best whole assignment submission, best answer for each question part, or your last answer. You can find out how your assignment is scored by reading the Assignment Scoring section at the top of the assignment.
- The Assignment and Question score grids have been updated to better show the current scores and submissions for questions and question parts.

For more information, see Viewing Assignment Scoring Details on page 157

The All Responses link has been renamed Previous Answers. Saving Work has been renamed Save Progress.
May 2011

Show My Work
You can now enter formatted math notation and upload files.
For more information, see Showing Your Work on page 70.

Personal Study Plan
• Chapter and practice quizzes can use separate question pools, depending on the textbook, so chapter quiz questions can more comprehensively evaluate your mastery of the material.
• Your quiz scores are now shown rather than "completion" as this metric better reflects your performance on the Personal Study Plan.
• Your practice quiz scores are not reflected in chapter quiz scores, so chapter quiz scores can provide a better indicator of your mastery of the entire chapter.
• Section quizzes are renamed as practice quizzes to better convey that these never contribute to your grade and are not an indicator of mastery.
For more information, see Personal Study Plan on page 173.

April 2011
WebAssign uses an improved help system that makes it easier to find answers or request help from customer service. The help window has a more modern look and feel including the following features: an improved and more visible search engine, better resizing of the search window, easy printing of topics, and sending feedback about the help information.

February 2011
The mathPad and calcPad tools include new Union and Intersection buttons.

December 2010
• Improved privacy, with secure access and password requirements, depending on your school. When you create or change passwords, password rules for your school are displayed and the new password is checked against those rules. See Changing Your Password on page 10.
• Showing your work. Your instructor can add a required or optional Show My Work part to any question. Look for additional Show My Work features in spring 2011. See Showing Your Work on page 70.
• New question feedback display. Some questions will show a feedback bubble associated with the mark. You can click the mark or bubble to see the feedback. See Viewing Question Feedback on page 66.
System Requirements

Before you start using WebAssign, or if you encounter problems when working in WebAssign, check to see if your system meets the following requirements.

Browsers Supported for WebAssign

WebAssign is tested and supported for the following Web browsers:

- Mozilla Firefox, versions 3.5 or later, for Linux, Mac OS X, and Windows
- Google Chrome, versions 12 or later, for Windows or Mac
- Microsoft Internet Explorer, versions 7 or later, for Windows

Note: Do not use Internet Explorer 6 to access WebAssign.

- Apple Safari, versions 5 or later, for Mac OS X and Windows

Other browsers might work, but are not supported. If you encounter problems when using a nonsupported browser, try using one of the supported browser versions.

Browser Settings for WebAssign

For best performance, configure the following settings in your Web browser. See your browser's help information for specific instructions.

- Allow cookies from www.webassign.net. You can use WebAssign even if you do not allow cookies, but you might have to log in more frequently. Once you log out and exit your browser, the cookie is deleted.
- Allow pop-up windows from www.webassign.net.

For security, do not allow your browser to store your WebAssign password.

Browser Plug-Ins Required for Some WebAssign Content

Some WebAssign content and tools require the following browser plug-ins:

- Adobe Acrobat Reader, version 8 or later
- Adobe Flash Player, version 10 or later
• Adobe Shockwave Player, version 11 or later
• Java, version 6 (build 1.6.0) or later

If you encounter problems when using advanced features of WebAssign such as mathPad or eBooks, check to be sure that you have supported versions of these plug-ins installed.

Additional learning resources provided by textbook publishers or instructors might require other software.

**Automatic Plug-In Version Checking**

When you log in to WebAssign as a student, WebAssign checks your scheduled assignments for certain questions identified as requiring either Java version 6 or Adobe Flash Player version 10. If any of your assignments include these questions, your system is checked to see if you have the required plug-in version installed.

**Note:** WebAssign does *not* perform a comprehensive check of all assignment questions to determine all plug-in requirements. You should be aware of the following:

- Questions using pencilPad or the WebAssign graphing tool require Adobe Flash Player, version 7 or later.
- Questions created by instructors might require other plug-ins or plug-in versions.

If you do not have the required plug-in version installed, a warning is displayed on your Home and My Assignments pages informing you about the required plug-in version.

Click the plug-in icon in this warning to obtain and install the required plug-in.

Assignments identified by WebAssign as requiring a plug-in version that is not installed display an icon indicating what plug-in version is required. You cannot open these assignments until the required plug-in version is installed. Clicking the assignment name displays an additional warning message.

Click the plug-in icon in this warning to obtain and install the required plug-in.
Required Connectivity and Recommended Connection Speeds

WebAssign is a Web-based application and requires Internet access. For best performance, especially when working with media-enhanced eBooks or assignments, use a broadband connection such as Cable or DSL.

If broadband Internet access is not available in your area, use a dial-up connection speed of at least 56K.

Installing Browsers and Browser Plug-Ins

Use the following links to obtain installation instructions and downloads for the supported browsers and browser plug-ins.

- Firefox: www.mozilla.com/firefox/
- Safari: www.apple.com/safari/
- Chrome: www.google.com/chrome/
- Acrobat Reader: http://get.adobe.com/reader/
- Flash Player: www.adobe.com/products/flashplayer/
- Shockwave Player: www.adobe.com/products/shockwaveplayer/
- Java: www.java.com/getjava
Getting Started

This chapter contains the following topics:

- Enrolling in a Class in WebAssign
- Logging in to WebAssign
- Understanding Your Home Page
- Managing Your WebAssign Accounts
- Purchasing WebAssign Access and eBooks
- Calendars
- Getting Email Notifications About Assignments
- Logging Out

Use WebAssign to work on your assignments, quizzes, and tests — whatever your instructor sets up for you — at any time of the day or night. Depending on how your instructor uses WebAssign, you can also see your scores and completely graded assignments. All you need is a computer with a connection to the Internet and a Web browser.

Your instructor creates your assignments, schedules them, and sets guidelines such as:

- How many times you can submit an assignment.
- If you can have extensions of due dates.
- If you can save your work without submitting it.
- The kind of feedback that you receive after you submit an assignment.

**Note:** The WebAssign Customer Support staff cannot give extensions, change your score, give you extra submissions, or help you with the content of your assignments.

To use WebAssign to complete assignments for a class, you must be enrolled in the class in the WebAssign system, you must have a WebAssign user account, and you might also be required to purchase WebAssign access.

**If you do not have either a class key for self-enrollment or a username, institution code, and password, contact your instructor.**
Enrolling in a Class in WebAssign

Your instructor determines how you enroll in a WebAssign class.

You can be enrolled in a WebAssign class in one of the following ways:

- If your class uses self-enrollment, your instructor provides you with a class key that you use to enroll yourself in the class. You can also create a new WebAssign account if you do not already have one.

- If your class uses instructor enrollment, your instructor enrolls you in the class and provides you with a new username, institution code, and password.

**Note:** If you already have a WebAssign account, in order to see your class you must either:

- log in to WebAssign with the username and password provided by your instructor
- log in to WebAssign with your existing account and then link it to the username and password provided by your instructor

- If your school has automatic enrollment, you are automatically enrolled in WebAssign classes after you enroll with your school.

**Note:** Schools with automatic enrollment often require you to log in to a school Web site in order to access WebAssign. If this is the case, ask your instructor for information about how to log in to WebAssign.

**See Also:**
- Logging in to WebAssign on page 5
- Changing Your Email Address on page 7
- Using the Same Login for Different Accounts on page 8
- Changing Your Password on page 10
- Resetting Your Password on page 11
- Purchasing WebAssign Access and eBooks on page 12

Enrolling Yourself in a Class Using a Class Key

If your instructor gives you a WebAssign class key, you can enroll yourself in the WebAssign class roster. If you do not already have a WebAssign account, you can create one after verifying the class key.

**Important:** An access code is not the same as a class key. You need a class key to enroll. You might need to pay student fees later with your access code.

**To self-enroll for a class:**

1. Go to the WebAssign login page (www.webassign.net), and click I have a Class Key.
2. Enter the class key your instructor gave you, and click **Submit**.

3. On the verification page, check the class information and determine whether or not the correct class and section is displayed.
   - If the correct class and section is listed, click **Yes, this is my class** and go to step 4 on page 3.
   - If the listed class or section is not correct, click **No this is not my class**. Try entering your class key again, in case you might have mistyped a character. If the correct class is still not displayed, contact your instructor.

4. If you have an existing WebAssign account, select **I already have a WebAssign account**, type the **Username**, **Institution**, and **Password** for your account, and click **Continue**.
   You are enrolled in the class and logged in to WebAssign using your existing account.

5. If you do not have an existing WebAssign account, you can create one now.
   a) Select **I need to create a WebAssign account**, and then click **Continue**.
b) Type the username that you would like to use for your WebAssign account in the **Preferred Username** field, and click **Check Availability** to see if the username that you want is available.

Usernames are not case-sensitive, so BobSmith, bobSmith, and bobsmith are all the same username.

c) After confirming the availability of your new username, type a password in both the **Choose a password** and **Confirm password** fields.

Ensure that your password meets the displayed requirements, which might be different than those shown above. Passwords are case-sensitive, so IAmCa3sar is not the same as iamca3sar.

d) Enter your **First Name**, **Last Name**, and **Email Address**, and optionally your **Student ID Number**.

e) Click **Create My Account**.

WebAssign confirms that your account has been created.

You should only enroll in the class once. After enrolling, you might also need to provide an access code to verify payment for the class.

You can click **Log in now** to log in to the new user account and go to your home page. Remember your username and password, because you will need them each time you log in.

**Tip:**

- If you forget your password, you can reset it.
- If you forget your username, your instructor can look it up for you.

**See Also:**

- [Logging in to WebAssign on page 5](#)
- [Resetting Your Password on page 11](#)
Logging in to WebAssign

For most institutions, you can log in to WebAssign at www.webassign.net.

Some institutions, departments, or instructors might log in to WebAssign differently. You might log in through your school's authentication server, or using a course management system like Blackboard.

**Note:** Depending on how you are enrolled in your classes, you might receive a WebAssign username and password from your instructor or your school, or you might create your own WebAssign username and password when you self-enroll in a class using a class key.

To log in to WebAssign, you must supply three credentials:

**Username**

Your username is unique at your institution.

Depending on how you are enrolled in your WebAssign classes, you might have more than one WebAssign username. Be sure to log in using the correct username and password for the class you are trying to access.

**Tip:** You can link your WebAssign accounts so you only need to remember one username and password.

**Institution**

The institution code is a shortened form of your school's official name. You should be given your institution code with your WebAssign username.

If you do not know your institution code, click **What is my institution**. In the What's My Institution Code window, type your school name and click **go**. Find the institution code for your school and click **Close This Window**.

**Password**

Your password protects your privacy and your work in WebAssign. If you have forgotten your password, you can reset it.

Before logging in to WebAssign on a shared computer, such as a lab or library computer, exit all open Web browsers. Then, open a new browser session to start using WebAssign.

**To log in to WebAssign (most institutions):**

1. In your Web browser, go to www.webassign.net.
2. Type your **Username**, **Institution** code, and **Password**.
3. Click **Log In**.
**Important:**

- The first time you log in to any WebAssign account, set your email address and change your password.
- After you finish working in WebAssign, log out of WebAssign and exit the browser completely. This helps ensure that nobody else can access your account.

**See Also:**

- Enrolling in a Class in WebAssign on page 2
- Changing Your Email Address on page 7
- Using the Same Login for Different Accounts on page 8
- Changing Your Password on page 10
- Resetting Your Password on page 11
- Purchasing WebAssign Access and eBooks on page 12

### Alternative WebAssign Login Sites for Selected Schools

Students and instructors at the following institutions should log in at a different Web address than www.webassign.net.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Login Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary Institute and St. Louis Country Day School</td>
<td><a href="http://www.webassign.net/micds/login.html">www.webassign.net/micds/login.html</a></td>
</tr>
<tr>
<td>North Carolina State University</td>
<td><a href="http://www.webassign.net/ncsu/login.html">www.webassign.net/ncsu/login.html</a></td>
</tr>
<tr>
<td>Ohio State University</td>
<td><a href="http://www.webassign.net/osu/login.html">www.webassign.net/osu/login.html</a></td>
</tr>
<tr>
<td>Penn State University</td>
<td><a href="http://www.webassign.net/psu/login.html">www.webassign.net/psu/login.html</a></td>
</tr>
<tr>
<td>Purdue University</td>
<td><a href="http://www.webassign.net/purdue/login.html">www.webassign.net/purdue/login.html</a></td>
</tr>
<tr>
<td>Texas A &amp; M</td>
<td><a href="http://www.webassign.net/tamu/login.html">www.webassign.net/tamu/login.html</a></td>
</tr>
<tr>
<td>University of Alabama at Birmingham</td>
<td><a href="http://www.webassign.net/uab/login.html">www.webassign.net/uab/login.html</a></td>
</tr>
<tr>
<td>University of Colorado</td>
<td><a href="http://www.webassign.net/colorado/login.html">www.webassign.net/colorado/login.html</a></td>
</tr>
<tr>
<td>University of Maryland, Math Department and Math Placement</td>
<td><a href="http://www.webassign.net/umd/login.html">www.webassign.net/umd/login.html</a></td>
</tr>
<tr>
<td>University of Utah</td>
<td><a href="http://www.webassign.net/utah/login.html">www.webassign.net/utah/login.html</a></td>
</tr>
<tr>
<td>University of Virginia</td>
<td><a href="http://www.webassign.net/uva/login.html">www.webassign.net/uva/login.html</a></td>
</tr>
<tr>
<td>University of Washington</td>
<td><a href="http://www.webassign.net/washington/login.html">www.webassign.net/washington/login.html</a></td>
</tr>
</tbody>
</table>

### Understanding Your Home Page

After you log in, you see your personalized WebAssign Home page. If you are listed on more than one class roster with the same username, or if you have
linked multiple WebAssign accounts, you can select a class from the **My Classes** menu to go to the Home page for that class.

On your Home page for a particular class, you can see summary information for the class, including:

- Announcements from your instructor
- A list of your current assignments
- Links to calendar and communication pages
- Your posted grades for the class

At the top of the Home page, a menu provides quick access to pages for your assignments, grades, communication, calendar, notifications, help, and options.

**Managing Your WebAssign Accounts**

You can update your email address and password for a WebAssign account or link multiple WebAssign accounts to use a single username and password.

**Changing Your Email Address**

In most cases you can change your email address. However, your school might have disabled your ability to change the email address associated with your account.

**Note:** Only your instructor and authorized WebAssign Customer Support personnel will be able to send email to your email address. WebAssign will not disclose your email address to third parties except as required by law. In no event will WebAssign violate the federal privacy rights of students as established by the Family Educational Rights and Privacy Act (FERPA) at 20 U.S.C. 1232g and 34 C.F.R. part 99. For more information about the use of your personal information, see the WebAssign privacy policy at www.webassign.net/info/privacy.html.

Once you add your email address to WebAssign you can:

- Easily reset your password if you forget it
- Receive messages that your instructor sends you from their WebAssign pages
- Receive notifications of assignment due dates, announcement posts, and extension and help requests
To view or change your email address:

1. Click My Options in the top right of your WebAssign page.
2. Click the Personal Info tab if not already selected.
   The email address for your WebAssign account is displayed in the Email Address field.

3. In Email Address, either edit or enter your email address.
4. In Password, enter your password.
5. Click Save.
   WebAssign sends a confirmation message to the email address you just entered.
6. Check the email address you entered for the confirmation message, and click the link in the message to confirm the email address change.
   Your email address is updated in the WebAssign system only after you click the link in the confirmation message.

Using the Same Login for Different Accounts

If you have more than one WebAssign account for the same institution, you can link them so you can log in to all of them using any of your usernames and
passwords. This way, you do not need to remember a separate login for each WebAssign account you have.

**Note:** If you log in through your school's Web site instead of [www.webassign.net](http://www.webassign.net), it is unlikely that you have more than one WebAssign account. However, if this is the case, you will not be able to link your accounts.

The information you have in different accounts remains separate when you link accounts — the only thing that changes is that all of the classes for all of your linked WebAssign accounts will be displayed whenever you log in to any of those accounts.

**To link your accounts:**

1. Log in to WebAssign using one of your username and password combinations.
2. Click **My Options** in the menu bar.
3. Click the **Accounts** tab.

![My Options](image)

4. Under **Link Accounts**, enter the username and password of the WebAssign account you are linking to. You can link more than one account.
5. Enter the password for the account you are logged in with, and click **Save** to save your changes.

**Example:** One of your WebAssign accounts has a username you cannot easily remember, such as **zh7yz123**. The login information for the account you are signed into right now (**krwright**) is the one you want to use for all of your accounts.

In this example, you would enter the username **zh7yz123** and the password for **zh7yz123** in the Link Accounts section, and then you would enter the password for the current account (**krwright**) in the **Password** field at the bottom of the window and click **Save**.
Changing Your Password

You should change your password occasionally to ensure the security of your WebAssign account.

**Note:** If WebAssign uses your institution's authentication server, use your school's method for changing your password.

Depending on your school, different password rules apply. When you change your password, the minimum password rules for your school are displayed. Your password is case-sensitive, so, for example, `1AmCa3s@r` is not the same as `1amca3s@r`.

**Tip:** Your school's password rules specify only the minimum requirements for your password. You can use the following guidelines to create a stronger password:

- Use at least 10 characters. Increasing the length of your password increases its strength exponentially. Your password can be up to 30 characters long.
- Use spaces. Using a phrase is one way to increase the length of your password without making it more difficult to remember.
- Use both uppercase and lowercase characters.
- Use two or more numbers.
- Use two or more symbols.

Do not include personally identifiable information like names, ID numbers, phone numbers, or birthdays in your password.

To change your password:

1. After logging in to WebAssign, click **My Options** in the top right.
2. Click the **Personal Info** tab if not already selected.
3. In **Change Password**, enter your new password, and then re-enter it for confirmation.

4. In **Password**, enter your old password.

5. Click **Save**.

   A confirmation message verifies that your password was changed or indicates why it was not changed.

**See Also:**
Resetting Your Password on page 11

### Resetting Your Password
If you forget your password and you have an email account on file in WebAssign, you can reset your password.

**Note:** If WebAssign uses your institution's authentication server, use your school's method for changing your password.

**To reset your password:**

1. In your Web browser, go to [www.webassign.net](http://www.webassign.net).

2. Click **Forgot your password** under the **Password** field.

3. Type the **Username**, **Institution** code, and **Email Address** for your WebAssign account.

4. Click **Submit**.
If your username, institution, and email address match the entries in your WebAssign account, you receive an email with instructions for resetting your password.

**Note:** If your information does not exactly match the information in your WebAssign account, or if you have not specified an email address in WebAssign, ask your instructor to reset your password.

5. In the email message, click the displayed **Reset Password** button or link.

6. On the Set-Password page, type your new password in the **Enter new password** and **Confirm new password** fields.

7. Click **Submit**.

A confirmation message verifies that your password was changed or indicates why it was not changed.

**See Also:**
Changing Your Password on page 10

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**Purchasing WebAssign Access and eBooks**

Depending on your school, you will usually be required to purchase access to WebAssign in order to complete your coursework.

There are several options for payment:

- You can purchase access online directly from WebAssign using a Visa, MasterCard, American Express, or Discover card, or with a check and a valid PayPal account.
- Your purchase of a new textbook might include a WebAssign access code card for the course.
- You can purchase WebAssign access code cards at many campus bookstores.

**Note:** Rarely, your instructor might need to change the textbooks used for your class after you have purchased access. If this occurs, your payment will be transferred automatically if an equivalent purchase option exists for the new textbooks. If no equivalent option exists, your payment will be refunded and you will need to purchase access to the class again.

---

**Grace Period**

If you are required to pay for WebAssign access to a class, you will have a 14-day grace period during which you can use WebAssign without purchasing access.

The WebAssign grace period begins with the class start date set by your instructor.

**Note:** Your instructor might have set the class start date earlier or later than the actual first day of class.
During the Grace Period

During the grace period, you can complete your coursework in WebAssign. At the publisher’s discretion, you might also have access to the eBook for your class, if one is available.

Each time you access your class, you will be reminded to purchase access or enter an access code.

After the Grace Period

After the grace period ends, you must purchase access online or enter a valid access code before you can continue using WebAssign for your class.

Choosing Between eBooks and Printed Textbooks

eBooks generally contain the complete text of the printed textbook. Some eBooks also contain additional features and content not available in the printed textbook.

Note: Depending on the class, eBook access might be included with WebAssign access, eBook access might be an optional purchase, or no eBook might be available.
If an eBook is available for any of your classes, My eBooks is displayed in your toolbar in WebAssign. Click My eBooks to display a list of the eBooks that are available.

If an eBook is available for your class, you should decide whether to purchase eBook access or the printed textbook before you purchase WebAssign access for the class. Each format has advantages and disadvantages, and you should determine which will work best for you.

You might want to review the following criteria:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>eBook</th>
<th>Printed Textbook</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td>• Includes the full text along with all figures and tables.</td>
<td>• Includes the full text along with all figures and tables.</td>
</tr>
<tr>
<td></td>
<td>• Often includes additional content which might be interactive.</td>
<td></td>
</tr>
<tr>
<td><strong>Features</strong></td>
<td>Varies by textbook, but usually includes many of the following:</td>
<td>• Bookmarking</td>
</tr>
<tr>
<td></td>
<td>• Bookmarking</td>
<td>• Highlighting</td>
</tr>
<tr>
<td></td>
<td>• Highlighting</td>
<td>• Annotating</td>
</tr>
<tr>
<td></td>
<td>• Annotating</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Printing pages</td>
<td>Highlighting or annotating a printed textbook might reduce its resale value or prevent you from being able to sell it.</td>
</tr>
<tr>
<td></td>
<td>• Searching</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Opening from assignment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Navigating using contents or page number</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Viewing glossary definitions for terms in context</td>
<td></td>
</tr>
<tr>
<td><strong>Convenience</strong></td>
<td>• With you wherever you have Internet access.</td>
<td>• With you wherever you carry it.</td>
</tr>
<tr>
<td><strong>Instructor Preference</strong></td>
<td>• Check with your instructor.</td>
<td>• Check with your instructor.</td>
</tr>
<tr>
<td><strong>Requirements</strong></td>
<td>• Most eBooks require either the free Flash plug-in or the free Adobe Reader.</td>
<td>• None.</td>
</tr>
</tbody>
</table>
### Understanding Textbook Features, Purchase Options, and Costs

The cost of WebAssign access is dependent on the textbook selected for the class.

As with printed textbooks, the cost of WebAssign access, eBooks, or other optional purchases can vary widely between classes. WebAssign pricing is based on many factors, including agreements with textbook publishers and the quantity and complexity of textbook materials and resources that are available for use in your assignments.

Some textbooks in WebAssign include traditional end-of-chapter questions but no other features. Other textbooks provide a range of features to help you learn, for example, tutorial questions, eBook links, interactive simulations, personalized study plans, or other learning resources. Access with these textbooks costs more not only because they provide more, but also because they represent a substantial investment by the publisher and WebAssign.

Some features available in WebAssign are indicated by icons displayed with the textbook.

- **Note:** Your instructor might not choose to use all of the available features in your class.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>eBook</td>
<td>You have access to an online version of the textbook that might contain additional interactive features. You must be logged in and enrolled in a WebAssign course to access the eBook. For some textbooks, access to the eBook is an optional purchase.</td>
</tr>
</tbody>
</table>
### Feature Description

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lifetime of Edition</strong></td>
<td>You are allowed unlimited access to WebAssign courses that use this edition of the textbook at no additional cost. This allows you to retake the course until you pass, or to take a multi-term course at no additional cost.</td>
</tr>
<tr>
<td><strong>Personal Study Plan</strong></td>
<td>You can use chapter and section assessments to gauge mastery of the material and generate individualized study plans that include various online, interactive multimedia resources.</td>
</tr>
<tr>
<td><strong>Textbook Resources</strong></td>
<td>Additional instructional and learning resources are available with the textbook, and might include testbanks, slide presentations, online simulations, videos, and documents.</td>
</tr>
<tr>
<td><strong>Enhanced WebAssign</strong></td>
<td>Includes advanced content including simulations and textbook examples, links to eBook, algorithmic solutions, for example, from Brooks/Cole Publishers. Specific features vary from book to book.</td>
</tr>
<tr>
<td><strong>WebAssignPLUS</strong></td>
<td>Includes textbook-specific end-of-chapter questions and tutorial exercises, interactive simulations, hints, and feedback to guide learning from John Wiley &amp; Sons, Inc. Publishers.</td>
</tr>
<tr>
<td><strong>Premium WebAssign</strong></td>
<td>Includes interactive exercises with in-depth tutorials and interactive conceptual resources that allow you to visualize concepts and see cause-and-effect relationships through online simulations from W. H. Freeman Publishers.</td>
</tr>
</tbody>
</table>

### Purchasing WebAssign Access and eBooks Online

If your textbook did not include an access code card for WebAssign, or if you want to use an eBook for your class, you can purchase WebAssign access or eBooks for your classes online.

WebAssign uses PayPal to securely process payments. You can make your purchase with a Visa, MasterCard, American Express, or Discover card, or with a check and a valid PayPal account.

**Note:** Depending on the class, eBook access might be included with WebAssign access, eBook access might be an optional purchase, or no eBook might be available.

In order to purchase or use an eBook, you must be currently enrolled in a class in WebAssign that uses that textbook.

### To purchase WebAssign access online:

1. Log in to WebAssign.
2. If necessary, select your class.
3. On the notice that is displayed, select **purchase access online**.

4. Click **Continue**.

   For some institutions, particularly schools using WebAssign in Blackboard, a message is displayed.

   WebAssign uses Paypal to process payments. For security, your transaction will be completed in a new browser window.

   If this message is displayed, click **Complete My Purchase on PayPal**. A new browser window or tab opens for you to complete your purchase.

   All of the classes for which you need to purchase access are listed. For some classes, you might be able to select among two or more options — for example, if you can purchase an optional eBook or Lifetime of Edition access.
5. Select the check box for each class for which you will purchase access.

6. If needed, select optional purchases for your classes.

7. Click **Checkout**.

8. Review the items in your cart.
   - If needed, read and confirm your agreement to any license agreements. Click the name of the license agreement to view it. Select the check box to confirm that you agree to its terms.
   - If you need to make changes, click **Edit Cart**.
   - If you are ready to purchase access, click **Continue**.

   When you click **Continue**, a PayPal payment page opens.

9. In the PayPal page, provide all of the requested information to purchase the items you selected.

   **Note:**
   - The purchasing page is currently provided by PayPal and is subject to change without notice.
   - To pay for WebAssign access using a check, you must create a PayPal account and log in. Use the instructions provided on the site to make your payment, and then continue with step 12 on page 19.

   - **Country:** Select your current country of residence.
   - **First Name:** Type your first name exactly as it appears on your credit card.
• **Last Name:** Type your last name exactly as it appears on your credit card.

• **Credit Card Number:** Type your valid credit card number without spaces or punctuation. The Payment Type indicator is automatically selected based on the card number you type.

• **Expiration Date:** Type the two-digit month and two-digit year of your card's expiration date.

• **CSC:** Type the three- or four-digit security code displayed on your credit card. For MasterCard or Visa, this is the last three digits in the signature area on the back of your card. For American Express, this is the four digits on the front of the card.

• **Address:** The exact address information that is requested varies by country. Provide the complete address where your credit card statements are sent.

• **Home Telephone:** Type the telephone number where you prefer to be contacted in case of a problem with your transaction.

• **Email:** Type your email address.

10. When you have provided all of the requested information, click **Review Order and Continue**.

11. Review the displayed information and click **Pay Now**.

12. Click **Return to WebAssign** to display your payment receipt from WebAssign.

13. Click **Print Page** to print the receipt for your records.

   A copy of the receipt is sent to the email address you provided for your WebAssign account.

**Note:**

- If you need to contact WebAssign Customer Support regarding this transaction, please provide the transaction ID from your receipt.
- If you drop a class, you can request a refund within 14 days of the purchase date.

14. Unless you needed to open a new browser window or tab to complete your purchase, click **Finish**.

15. If you needed to open a new browser window or tab to complete your purchase:

   a) Close the browser window or tab. Your original browser window or tab should display the message Did you successfully purchase WebAssign access?

   b) Click **Yes, start using WebAssign**.

You have access to the classes or eBooks that you purchased for the duration of the terms for which you purchased them.

**See Also:**

*Requesting Refunds* on page 22
Entering Access Codes to Verify Purchase

If you purchased an access code card in your bookstore or an access code card was included with your textbook, you can enter it in WebAssign to verify payment for the class.

**Important:** Make sure that your access code card prefix is valid for your class before you open it. Check your access code card prefix or look up the access code card prefix you need before you purchase it at: webassign.net/user_support/student/cards.html.

**Note:** An access code is different from a class key. A class key is used to add yourself to a class roster, but does not indicate payment for the class.

Usually, an access code is valid only for one term and one class. Occasionally, a textbook includes a multi-term access code. Such a code typically includes either 2S or 3Q in the prefix, indicating two semesters or three quarters, respectively.

If your access code was provided on a card (either with your textbook or purchased from your school bookstore), scratch off the silver coating to reveal the access code. Access codes provided on these cards should begin with two or three letters followed by ten additional characters.

Some access codes come in a security envelope and begin with a longer prefix, such as McGraw-2S/3Q, followed by four sets of four characters. If you receive a security envelope access code card, open it to reveal the access code.
To enter your access code:

1. Log in to WebAssign.

2. If necessary, select your class.

3. On the notice that is displayed, select **enter an access code**.

4. Select your access code prefix from the **Choose your access code prefix** drop-down list.

   If your prefix is not listed, your access code might not be valid for this class.

   **Note**: Access Codes are not interchangeable from class to class.

5. Enter your access code in the boxes and click **Continue**.
If your access code is valid, a message confirms that you have successfully entered an access code. You will not see the notice about entering an access code again for this class.

**Requesting Refunds**

If you drop a class, you can request a refund within 14 days of the purchase date.

- **Note:** WebAssign cannot provide refunds for printed textbooks or access code cards purchased from your campus bookstore.

**To request a refund if you drop a class:**

1. Go to the WebAssign help request page: [www.webassign.net/info/help.html](http://www.webassign.net/info/help.html).
2. In the Submit Help Request form, enter all of the requested information.
3. In the **How can we assist you** box, provide the following information:
   a) On the first line, type **Refund Request**.
   b) Starting on the next line, provide the transaction ID for your purchase and any additional information about your request.
4. Click **Submit** to send your request.

**Calendars**

When an instructor schedules an assignment, it is automatically displayed on your calendar. Your calendar shows all of your assignments on their due dates. It also shows class start and end dates as well as any personal calendar events you have added. You can edit or delete any event you have added to your calendar, but you cannot modify instructor events.

**Using Your Calendar**

Your calendar is easy to navigate.

**To use your calendar:**

1. From the menu bar, click **Calendar**.
   - The calendar is displayed, open to the current month.
2. Click:
   • the left or right arrows to view a different month
   • a date to view details about events on that date or to add a personal
calendar event to that date
   • an event to view details about the event or to edit or delete the event

  **Note:** You can only edit or delete your personal calendar events.

**See Also:**
Assignments on page 41

### Creating a New Calendar Event

You can add events to your calendar. Types of events you might want to add are
group meetings, appointments, or office hours.

1. Open the calendar.

2. Click the date to which you want to add an event.

3. Click **New Event**.

4. Enter the details of your event:
   • **Title:** enter a short but descriptive phrase that will remind you of what
     the event is
• **Time:** select the time you want the event to start and the number of hours and minutes you expect the event to last. If the event is not time-sensitive, then select the **No specific Time** check box instead.

• **Description:** enter the event details

5. Click **Save**.

### Editing a Calendar Event

You can edit calendar events that you have created.

**Note:** You cannot edit calendar events that are from your instructor, such as assignment due dates.

1. Open the calendar.
2. Click the event you want to edit.
3. Change the event details.
4. Click **Save**.
   The calendar event is changed.
5. Click the month to return to the calendar.

### Deleting Calendar Events

You can delete any event you have added to your calendar.

**Note:** You cannot delete events scheduled by your instructor, such as assignment due dates.

1. Open the calendar.
2. Click the event you want to delete.
3. Click **Delete**.
4. A popup is displayed asking if you are sure you want to delete the event. Click **OK**.
   The calendar event is deleted.
5. Click the month to return to the calendar.

### Getting Email Notifications About Assignments

You can receive an email notification stating that an assignment due date is approaching, anywhere from 6 to 48 hours before the assignment is due.

You can also request email notifications to be sent to you when other changes occur, such as when a due date changes, when someone posts an announcement, or when your instructor responds to your extension request, private message, or help request.
Note: You need an email address to receive notifications. If you do not have a valid, confirmed email address on file in WebAssign, a message is displayed asking you to enter one.

To request email notifications:

1. From the menu, click Notifications.

2. On the Settings tab, select the number of hours before an assignment is due that you want to receive an email message. You can select more than one time frame.

3. Select when you would like to receive an immediate email message for other changes, such as due date changes, extension request responses, private messages, and help requests.

4. If you have not already entered a valid email address, click the Notification Contact Info tab and enter an email address.

   Note: If you need to verify your email address, a Verify this email address button is displayed. Click it to verify the address and follow the instructions on the screen.

5. Click Save to apply your changes. The window indicates whether your changes have been successfully updated.

Logging Out

When you finish working on your assignments, log out of WebAssign and exit the browser completely to ensure that nobody else can see your work or access your account.

To log out, click Log out at the top right.

Note: If you use a browser that is shared by others, make sure the browser does not save your password.
Known Issues and Troubleshooting

This chapter contains the following topics:

- Different Name or Institution Is Displayed at the Top of Your WebAssign Page
- You Cannot Access WebAssign
- Repeated Requests to Log In to WebAssign
- You Cannot Submit an Assignment
- Logging In Directly To WebAssign For a Blackboard-Enabled Course
- Browser Displays a Warning About Content Security
- Clicking Part of an Image To Answer a Question Does Not Work
- You Cannot Install LockDown Browser on a Mac
- Incorrect Characters Are Displayed When Typing in Some Questions

Sometimes, WebAssign might not behave as expected. This could be the result of a technical problem, a limitation, or user error. Whatever the cause, these topics can help you understand and address some of the most common issues before calling WebAssign Customer Support.
Different Name or Institution Is Displayed at the Top of Your WebAssign Page

This occurs if the browser is logged in with a different person's WebAssign account. Make sure you always log in using your account so you get credit for your work.

If you notice that you are not in your account, write down your answers and log out of the other person’s account. Then, log back in using your username, institution, and password.

When you log in correctly, your username and school are displayed in the "logged in as" message. Also, your full name and institution are displayed in the box in the top right of your WebAssign pages.

You Cannot Access WebAssign

If you cannot access WebAssign there are several steps you can take to attempt to correct the issue.

Check the following:

- Your hardware is functioning correctly
- You are able to connect to other Internet sites
- You are using the most updated versions of your operating system, Web browser, and browser-related plug-ins (Flash and Java)

After you have verified the previous items, you can report your problem by submitting a help request at www.webassign.net/user_support/student/. Provide as much of the following information as possible for the time the problem occurred/occurs:

- Username, school, and any classes you are enrolled in
- Assignment and question you are having difficulty with
- Date and time the problem occurred
- Operating system used when the problem occurred
- Antivirus program you are using
- Anti-spyware program you are using
- Name of the Web browser you are using

ียว Important: Please note that using WebAssign to submit your assignments does not change any provisions of your institution's honor code or affect in any way guidelines provided by your instructor about completing or submitting work.

Attempts to abuse, misuse, or otherwise violate the integrity of the WebAssign site might not only be considered violations of the honor code, but might also be prosecuted under existing state and federal laws.
Repeated Requests to Log In to WebAssign

Certain pages in WebAssign might ask you to log in repeatedly. Usually, this occurs after an extended period of inactivity, for example, if you forgot to log out of WebAssign.

You can resolve the problem using the following steps.

1. Either click **log out** to log out of WebAssign, or exit your browser.
2. If the problem still occurs, set your browser to accept cookies from webassign.net.

For increased security and to avoid this problem, remember to log out every time you are finished using WebAssign.

You Cannot Submit an Assignment

When you attempt to submit an assignment, WebAssign indicates that the assignment is past due, even though your clock indicates that it is not yet time for the assignment to be due.

WebAssign assignment due dates and times are determined by the clocks of the WebAssign servers, not by the date and time indicated on your computer. Every effort is made to ensure that these server clocks are accurate.

To avoid this problem, be sure to submit assignments well before the last minute. Note that the time displayed at the top of the page in WebAssign is the WebAssign server time when the page was loaded into your browser and might not reflect the current time on the WebAssign server.

Logging In Directly To WebAssign For a Blackboard-Enabled Course

If the Blackboard system is unavailable, you can log in to WebAssign directly if you have previously set your WebAssign password.

WebAssign student accounts generated by Blackboard do not have passwords because authorization is performed by the Blackboard system. Before you can log in to WebAssign directly, you must set your password using the steps described here.

To set a WebAssign password for your Blackboard-created account:

1. Log in to WebAssign through Blackboard.
2. Write down your WebAssign username.
   Your username is displayed in the top right corner of the WebAssign page.
3. Set your email address in WebAssign.
   You need an email address in order to reset your password.
4. Reset your password.

Since Blackboard does not create a WebAssign password for you, you need to reset your password in order to create a password.

After noting your WebAssign username and creating your password, you can log in to WebAssign directly.

If you need help with your account, contact WebAssign by submitting a help request at www.webassign.net/user_support/student/.

See Also:
Changing Your Email Address on page 7
Resetting Your Password on page 11
Logging in to WebAssign on page 5

Browser Displays a Warning About Content Security

Rarely, your browser might display a warning that a page in WebAssign contains some content that is not encrypted or secure. The browser message might be like one of the following messages:

- This page contains both secure and nonsecure items. Do you want to display the nonsecure items?
- Do you want to view only the webpage content that was delivered securely? This webpage contains content that will not be delivered using a secure HTTPS connection, which could compromise the security of the entire webpage.
- You have requested an encrypted page that contains some unencrypted information. Information that you see or enter on this page could easily be read by a third party.

Your browser might also display a broken padlock icon or a padlock icon with an exclamation point to indicate this situation.

**Important:** This warning does not indicate that anything is wrong with WebAssign itself. It occurs when an assignment, question, communication, or other user-created content in WebAssign references images or other files from outside of WebAssign.

When this warning is shown, your browser usually gives you a choice to view the unencrypted content. If you do not think that the unencrypted content poses a security risk, choose to view it.

If you are concerned that the unencrypted content might pose a security risk, choose not to view it and contact WebAssign Customer Support to request investigation of the content. In most cases, an assignment or question that references unencrypted content can be updated to reference only secure content from WebAssign.
Clicking Part of an Image To Answer a Question Does Not Work

In some browsers, when answering an identification question by clicking an image, the clicked area does not correspond with the location of your mouse pointer when you clicked.

This is a known issue with certain browsers.

To resolve this problem, open the assignment using Internet Explorer or Firefox.

See Also:
Answering Identification Questions on page 94

You Cannot Install LockDown Browser on a Mac

Sometimes, LockDown Browser does not install correctly on Mac OS X. Three scenarios have been reported to occur.

The installation finishes with Configuration Alert messages

The messages state either

- The configuration file could not be found

or

- Internal error: cannot retrieve target path

LockDown Browser usually works even when these messages are seen.

The installation finishes, but LockDown Browser does not work when you open it

If LockDown Browser installs but does not work when you open your assignment, try uninstalling it and then reinstalling it to a different location than the default one. Use the steps given for The installation fails and does not install LockDown Browser on page 31.

The installation fails and does not install LockDown Browser

If LockDown Browser cannot be installed at all, try changing the installation path to a different location than the default one. For example, install LockDown Browser to your desktop. Use the following steps:

1. Run the LockDown Browser package file (Install_WebAssign_LockDown_Browser.pkg) and acknowledge any security warning.

2. On the Introduction page of the installer, click Continue.

3. On the Read Me page, click Continue.
4. On the Installation Type page, click **Change Install Location**.
5. Select the disk on which to install LockDown Browser, and then click **Choose Folder**. Navigate to the folder you want to use and click **Choose**. Then, click **Continue**.
6. On the Installation Type page, click **Install**.
7. If needed, enter your password to install the application.

**See Also:**
Working on Assignments with LockDown Browser on page 45

### Incorrect Characters Are Displayed When Typing in Some Questions

Sometimes in Flash-based question types, such as mathPad, calcPad, physPad, NumberLine, or graphing tool, the characters that are displayed in your answer are not the characters you typed. Instead, random numbers are displayed. Or, your answer might not be visible because the text is white on a white background.

This problem could also occur in Flash-based learning materials associated with your course. It occurs only on Windows computers.

This problem is caused by the GuardedID security program, which provides protection against keylogging spyware. Unfortunately, GuardedID can also interfere with normal operation of some gaming applications and WebAssign tools.

GuardedID is installed as part of the Comcast Xfinity Constant Guard Protection Suite, and might also be included in other security packages.

To resolve this problem, either uninstall GuardedID or disable it while you are using WebAssign. Instructions are available on the GuardedID Web Site at [www.guardedid.com/support_faq.aspx](http://www.guardedid.com/support_faq.aspx).
Support and Documents

Information and help with using WebAssign is just a few clicks or a phone call away.

Documents for You
WebAssign provides extensive documentation. See the following documents for more information.

Student Quick Start Guide
www.webassign.net/manual/WA_Student_Quick_Start.pdf: Brief information about logging in to WebAssign, enrolling in classes, purchasing access, and viewing assignments.

Student Online Help
www.webassign.net/manual/student_guide/: The online help contains the full contents of the WebAssign Student Guide. Open the online help from within WebAssign by clicking Help in the top right of any page.

WebAssign Student Guide

WebAssign Customer Support
Sometimes, you need a personalized answer to a specific question. Or, you are having a problem that is not covered by the known issues or helps. WebAssign Customer Support is fast and free.

- From the WebAssign application, click Help and then click Customer Support; or, go to www.webassign.net/info/help.html.
- Call (800) 955-8275.

The WebAssign Customer Support staff cannot:
- change your username or password
- give extensions
• change your score
• give you extra submissions
• help you with the content of assignments
• resolve problems with PayPal payments

PayPal Support
For support with PayPal-related problems, contact PayPal directly at www.paypal.com or 1-402-935-2050.
eBooks and Resource Materials

This chapter contains the following topics:

- Opening eBooks
- Using eBook Features
- Closing eBooks
- Viewing Resource Materials

Online textbooks — eBooks — are available for some courses in WebAssign. Your instructor might also have shared additional resource materials, either from the textbook publisher or from other sources.

Note: Depending on the class, eBook access might be included with WebAssign access, eBook access might be an optional purchase, or no eBook might be available.
Opening eBooks

After you have purchased an eBook or WebAssign access for a class that includes an eBook at no additional charge, you can view the eBook whenever you are logged in to WebAssign for the duration of the class.

**Note:** At the publisher's discretion, you might have access to any available eBooks for your class during the grace period.

If an eBook is available for any of your classes, My eBooks is displayed in your toolbar in WebAssign.

**To open an eBook you have purchased:**

1. Click My eBooks to display a list of the eBooks that are available.

   ![WebAssign interface showing My eBooks](image)

2. Click the title of any eBook you have purchased to open it.

   Your eBook opens in a new browser window or tab.

   **Tip:** You can also open a purchased eBook by clicking its title when it is displayed on your class Home page. Some assignment questions might also contain links to the relevant sections of the eBook.

Using eBook Features

The features and implementation of each eBook is dependent on the publisher. Some eBooks are distributed as Web pages, some are PDF documents, and some use the free Adobe Flash player. Many eBooks include help information from the publisher that describes how to use the features that are available for that eBook.

The following three figures illustrate some of the differences among eBooks.

An eBook that opens each section in a separate window or browser tab:
An eBook that includes the navigation, content, search, and other features on a single Web page:

An eBook that uses Adobe Flash to provide features like annotating, bookmarking, and highlighting:

Many eBooks share some of the following characteristics:
• eBooks generally include the complete text of the printed textbook, along with all figures and illustrations.
• eBooks usually have a table of contents that you can click to navigate to specific chapters or sections.
• You can usually search for text in eBooks.
• You can usually navigate to a specific page number by typing the page number in a text box.
• You can often bookmark pages in the eBook.
• You can often add highlighting and notes to the eBook. Your highlighting and notes are saved between sessions and are available to you anytime when you open the eBook.
• You can usually zoom in and out when viewing the eBook.
• You can sometimes add links in the eBook which open media such as videos. Some of these additional media are interactive.
• You can usually print pages from the eBook.
• You can sometimes save the eBook to your computer for offline viewing.
• eBooks sometimes require either the free Adobe Reader or the free Adobe Flash Player.
• You can sometimes use an interactive glossary or click on certain terms in the text to view the glossary definition.
• Often the eBook will have a toolbar for navigating the eBook and implementing its various features.

Closing eBooks

When you are finished viewing an eBook, remember to close it.

Note: When you log out of WebAssign, all of your open eBooks are automatically closed.

Viewing Resource Materials

If your instructor has shared resource materials with you in WebAssign, you can view them from your class Home page.

Informational resources provide you with information you need to know about your class. Examples include syllabi, grading rubrics, or instructions for answering questions.

Learning resources help enhance or reinforce your understanding of the course content. Examples include supplemental reading materials, video files to aid in learning a topic, or reference materials such as a table of formulas and constants.

To view resource materials for a class:

1. Click Home. If necessary, select a class from the My Classes menu.
Any resources your instructor has made available to you are displayed on your Home page for your class in the Resources panel.

The list of resources might include sections that can be expanded or collapsed.

- To expand part of the resources list, click the right arrow icon. The items under the expanded heading are listed.
- To collapse part of the resources list, click the down arrow icon. The items under the collapsed heading are no longer displayed.

2. To view a resource, click its title in the Resources panel. Depending on your browser settings, you might have to choose to save or to open the resource. You might also have to choose an application to use when opening the resource.
Assignments

This chapter contains the following topics:

- Viewing a List of Your Assignments
- Opening Assignments
- Working on Group Assignments
- Working on Assignments with LockDown Browser
- Working on Timed Assignments
- Printing Assignments

Assignments are the work you do for your class in WebAssign, and might include homework assignments, labs, quizzes, or tests, depending on your instructor.

See Also:
- Viewing Assignment Scoring Details on page 157
- Using Your Calendar on page 22
Viewing a List of Your Assignments

You can view a summary of your current assignments and due dates on your Home page for a class, or you can view a detailed list of your current or past assignments on your My Assignments page.

⚠️ Important: Do not wait until the last minute to submit an assignment. Assignment cutoff times are determined by the clock of the WebAssign server, not by the clock on your computer. Every effort is made to ensure that these server clocks are accurate. If the assignment cutoff time is 10:00 P.M., you cannot submit the assignment after 10:00 P.M. according to the WebAssign server, regardless of the time displayed on your computer.

Viewing a Summary of Your Assignments

To view a summary of your current assignments:

Click Home.
If necessary, select a class from the My Classes menu.

Your current assignments for the class are listed in the My Assignments panel along with due dates and icons indicating any assignment restrictions and whether the assignment is a group assignment:

<table>
<thead>
<tr>
<th>Restriction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🟢 Conditional Assignment</td>
<td>If the icon is green, you can open the assignment. If gray, click the icon or the grayed-out assignment name to view the condition you need to meet on a prerequisite assignment in order to open this one. If you cannot meet the condition, you might want to contact your instructor to see if you can be waived of the condition.</td>
</tr>
<tr>
<td>🟢 Group Assignment</td>
<td>You and other group members can all work on the assignment; the assignment score is the same for all group members.</td>
</tr>
<tr>
<td>🕒 Timed</td>
<td>When you open this assignment, you will have a specified amount of time to complete the assignment. The remaining time will be displayed in the top right corner while you are working on the assignment.</td>
</tr>
<tr>
<td>🗝️ Password Protected</td>
<td>You must enter an assignment password provided by your instructor in order to open this assignment.</td>
</tr>
<tr>
<td>🌐 IP Address Restricted</td>
<td>You must log in to WebAssign from locations designated by your instructor in order to open this assignment.</td>
</tr>
</tbody>
</table>
Viewing a Detailed List of Your Assignments

To view a detailed list of your current or past assignments:

1. Click Home.
   - If necessary, select a class from the My Classes menu.

2. In the My Assignments panel, click either Current Assignments or Past Assignments.

Your current or past assignments for the class are listed in the My Assignments window. Each assignment includes the following information:

- The name of the assignment, such as Homework – Chapter 3.
- The assignment category, such as (Homework), in parentheses after the assignment name.
- Icons indicating any assignment restrictions and if the assignment is a group assignment.
- If the assignment is timed, the amount of time you have to complete the assignment.
- The date and time that the assignment is due.
- A description of the assignment, if one was provided by your instructor.
- The score you received on the assignment, if you submitted the assignment and your instructor chose to show you the score.

Note: If a past assignment is not displayed on the list, it is no longer available for review. Contact your instructor to request access to the assignment.

Opening Assignments

You can open an assignment to view it or work on assignment questions from either your Home page or My Assignments page for a class.

To open an assignment:

1. From your Home page or My Assignments page for a class, click the name of the assignment you want to open.

2. If necessary, acknowledge any assignment restriction notices or enter the assignment password and click Continue.
Note: If a conditional release icon is displayed, you must meet a condition on a prerequisite assignment in order to access this one. If the icon is gray, you have not yet met the condition. Click the icon or assignment name for a description. If you need to access a conditional assignment but have not met the condition, contact your instructor. He or she might waive the condition for you.

The Assignment page opens, showing information about the assignment and the assignment questions.

At the top of the Assignment page, you can see summary information about the assignment, including your score for the entire assignment and for individual questions, the assignment due date and time, and any assignment instructions or access restrictions that have been added by your instructor.

The assignment questions are displayed in order after the summary information. For each question, the available and earned points are listed.

See Also:
Viewing Assignment Scoring Details on page 157

Working on Group Assignments

Some of your assignments might display the group assignment icon to indicate that you will complete this assignment in collaboration with other students in your group.

When you are working on group assignments:

• Any member of the group can work on the assignment.
• You will see any responses submitted by other group members.
• You will not see notes contributed by other group members.
• All members of the group receive the same score for the assignment, regardless of their individual contributions.

To complete a group assignment:

1. From your Home page or My Assignments page for a class, click the name of the assignment you want to open.
2. Read the notice describing any assignment restrictions.
3. If necessary, enter the assignment password.
4. Click Continue.

The assignment opens. Your group members for the assignment are listed at the top of the assignment.
5. Work on the assignment questions and submit your responses.

**Working on Assignments with LockDown Browser**

Some of your assignments might display the LockDown Browser icon 🛠️ to indicate that you must install and use WebAssign LockDown Browser to complete the assignment.

⚠️ **Important:** WebAssign LockDown Browser requires you to have one of the following operating system/browser combinations installed:

- Windows XP or later with Microsoft Internet Explorer, version 7 or later
- Mac OS X 10.4 or later with Apple Safari, version 3 or later

The listed browser versions will be used when you open assignments with LockDown Browser even if you normally use a different browser to access WebAssign.

You cannot complete assignments requiring LockDown Browser on any other platforms. To check your system for LockDown Browser or to install LockDown Browser, go to www.webassign.net/user_support/student/system_requirements.html.

While you are working on an assignment that requires LockDown Browser, you cannot use other applications, view other Web sites, copy, or print. These restrictions help to provide a fair testing environment for all students. The restrictions are lifted when you close the assignment by clicking **Close LockDown Browser**.

**To complete an assignment that requires the WebAssign LockDown Browser:**

1. From your Home page or My Assignments page for a class, click the name of the assignment you want to open.
2. In the Assignment Restrictions message, click the link to check your system to see if LockDown Browser is installed.
   - If you see a confirmation page indicating that WebAssign LockDown Browser is installed, go to step 3 on page 46.
   - If you do not see a confirmation page — you might see a browser message that it cannot open the address associated with the ldb protocol — install LockDown Browser as described below.

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Installation Steps</th>
</tr>
</thead>
</table>
| Windows          | 1. Click the link to download LockDown Browser.  
                  2. Click Download.  
                  3. Click Save to save the installation file to your computer.  
                  4. Run the downloaded installation file (InstallWebAssignLDB.exe) and follow the instructions in the InstallShield Wizard. |
| Mac              | 1. Click the link to download LockDown Browser.  
                  2. Click Download and save the zip file.  
                  3. Double-click the downloaded zip file (InstallWebAssignLDB.zip) to extract the package file.  
                  4. Run the extracted package file (Install_WebAssign_LockDown_Browser.pkg).  
                  5. Acknowledge the security warning, and then follow the instructions in the installer. |

3. If necessary, enter the assignment password.

4. Click Continue.  
The assignment opens.

5. Work on the assignment questions and submit your responses.

6. When you are finished with the assignment, click Close LockDown Browser.

Tip: If the assignment is timed, click the timer to collapse it, and then click Close LockDown Browser.

See Also:
You Cannot Install LockDown Browser on a Mac on page 31
Working on Timed Assignments

Some of your assignments might display the timed assignment icon to indicate that once you start the assignment, you will have only a limited amount of time to complete it.

To complete a timed assignment:

1. From your Home page or My Assignments page for a class, click the name of the assignment you want to open.

2. Read the notice indicating how much time you will have and describing any assignment restrictions.

   **Important:**
   - Only start a timed assignment if you expect to be able to complete the entire assignment without interruption.
   - You cannot “pause” a timed assignment after you start it.
   - For timed assignments, the time you have to complete the assignment is always the lesser of the allotted time for the assignment and the time remaining until the assignment is due.

3. If necessary, enter the assignment password.

4. Click Continue.

   The assignment opens. The time remaining is displayed in the top right corner of your browser window.

   ![Time remaining](image)

   The timer bar at the bottom of the timer displays a graphical representation of the remaining time relative to the total time allowed for the assignment.

   If you need to click something behind the timer, click the timer bar. The timer text is hidden and only the timer bar is displayed.

   ![Timer bar](image)

   To display the timer text, click the timer bar again.

5. Work on the assignment questions and submit your responses.

   If you are working on the assignment when the time remaining for the assignment reaches zero, all of your responses are automatically submitted so you do not lose any points for unsubmitted responses. As with other assignments, if you log out of WebAssign or close your browser, your answers are not automatically submitted.
Note: After you start a timed assignment, the due date for the assignment indicates the date and time when the timer expires or the original assignment due date, whichever comes first. This lets you know the last time that you can submit the assignment.

Printing Assignments

You can print an assignment by clicking Print Assignment at the top of the Assignment page. Using Print Assignment formats the assignment to remove buttons and line breaks, and often prints using less paper than just using Print on your Web browser.

To print an assignment:

1. From your Home page or My Assignments page for a class, click the name of the assignment you want to open.

2. If necessary, acknowledge any assignment restriction notices or enter the assignment password and click Continue.
   The Assignment page opens.

3. Click Print Assignment.
   Your browser's print function is displayed.

   Your printed assignment displays summary information about the assignment, including your name, the instructor name, the class name, class section, class term, assignment category, assignment name, and the time and date the assignment was printed.

   Note: Assignments that include large tables, large graphics, or complex layouts wider than the Print Assignment output format might not print as expected. Line breaks might be displayed oddly or text or graphics might be truncated. Changing printer format from Portrait to Landscape might help in some cases.
1. -5 points
   This example asks to input two values and then the third box answer key is a condition based on the the first two answer boxes.
   Enter the first value: 
   Enter this value, if
   If the first value is greater than the second value, enter the first value for your answer. If it is less than the second value, enter the second value.
   You must complete other answer boxes first for this answer box to be available.

2. -5 points
   To get a correct symbol in answer 2, enter 2 for part 1 and then 10 for part 2.
   What is \( a + b \)?
   \( a + b = \)
   You must complete other answer boxes first for this answer box to be available.

3. -5 points
   What is \( a + b \) (enter 4)
   You must complete other answer boxes first for this answer box to be available.
This chapter contains the following topics:

- Types of Questions
- Answering Questions
- Submitting Your Answers
- Viewing Question Feedback
- Answers That Cannot Be Understood
- Showing Your Work
- New Randomization
- Saving Your Answers
- Making Notes About a Question
- Viewing Your Previous Answers for a Question

The section explains the types of questions you may encounter in WebAssign and general information about saving and submitting questions. You can also find information about showing your work, generating new randomizations, and viewing question feedback and previous answers.

For information about answering a specific question type see either Answering Common Question Types on page 91 or Answering Math and Science Questions on page 103, depending on the type of question you are trying to answer.
### Types of Questions

The following table provides a visual reference that you can use to identify the type of question you are trying to answer.

Once you identify the question type, you can click the link in the Question Type column to go directly to the section that describes answering this type of question.

#### Note:
- If a math palette appears when you click in an answer box, then the question is not a fill-in-the-blank question and you should use the appearance of the palette to identify your question type in this table.
- If a question has more than one part, see *Answering Matching Questions* on page 92 for more information about how to answer the question.

<table>
<thead>
<tr>
<th>Question Type</th>
<th>Visual Example and Description</th>
</tr>
</thead>
</table>
| **Multiple-choice**  | Select a single response from a list of mutually exclusive choices.  
See *Answering Multiple-Choice Questions* on page 93. |
| ![Multiple-choice Example](image) |
| **Multiple-select**  | Select one or more responses from a list of non-exclusive choices.  
See *Answering Multiple-Select Questions* on page 93. |
<p>| <img src="image" alt="Multiple-select Example" /> |</p>
<table>
<thead>
<tr>
<th>Question Type</th>
<th>Visual Example and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matching</strong></td>
<td>Match items in one column to corresponding items in a second column.</td>
</tr>
<tr>
<td></td>
<td>See <a href="#">Answering Matching Questions</a> on page 92</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Matching Example" /></td>
</tr>
<tr>
<td><strong>Essay</strong></td>
<td>Type an answer to the question into the essay box provided.</td>
</tr>
<tr>
<td></td>
<td>See <a href="#">Answering Essay Questions</a> on page 96</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Essay Example" /></td>
</tr>
<tr>
<td><strong>pencilPad</strong></td>
<td>Use the pencilPad to draw a simple figure to respond to the question.</td>
</tr>
<tr>
<td></td>
<td>See <a href="#">Answering pencilPad Questions</a> on page 95</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="pencilPad Example" /></td>
</tr>
<tr>
<td><strong>File Upload</strong></td>
<td>Electronically submit a file containing your work, for example, an Excel spreadsheet or a research paper.</td>
</tr>
<tr>
<td></td>
<td>See <a href="#">Uploading Files for Questions</a> on page 96</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="File Upload Example" /></td>
</tr>
<tr>
<td>Question Type</td>
<td>Visual Example and Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------</td>
</tr>
</tbody>
</table>
| Fill-in-the-blank | Using the periodic table in your textbook or the periodic table found on the web, answer the following questions.  
What is the element with atomic number 87?  
What is the element with atomic number 17?  
[Answer a long version] |
| Numerical | What is a root of this equation?  
$y = x^2 - 11x + 28$  
Enter a number |
| Math Questions Using Calculator Notation | Suppose a calculator manufacturer has the total cost function $C(x) = 17x + 2400$ and the total revenue function $R(x) = 34x$.  
A. What is the equation of the profit function for the calculator?  
B. What is the profit on 300 units?  
[Type a mathematical expression] |
| mathPad | Solve the formula for the variable $h$.  
$V = \frac{1}{3}\pi r^2 h$  
h = |
<table>
<thead>
<tr>
<th>Question Type</th>
<th>Visual Example and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>calcPad</strong></td>
<td><img src="image" alt="calcPad Example" /> Use the calcPad tool to enter a correctly formatted mathematical expression. See [Answering calcPad Questions](page 118) on page 118.</td>
</tr>
<tr>
<td><strong>physPad</strong></td>
<td><img src="image" alt="physPad Example" /> Use the physPad tool to enter a correctly formatted mathematical expression that might include symbols used in physics. See [Answering physPad Questions](page 122) on page 122.</td>
</tr>
<tr>
<td><strong>chemPad</strong></td>
<td><img src="image" alt="chemPad Example" /> Use chemPad to enter chemical formulas and equations that are automatically displayed in correct chemical notation. See [Answering chemPad Questions](page 141) on page 141.</td>
</tr>
<tr>
<td>Question Type</td>
<td>Visual Example and Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------------</td>
</tr>
</tbody>
</table>
| **Identification** | Click on the place in the image that answers the question.  
See **Answering Identification Questions** on page 94 |
| **NumberLine**   | Default mode: use the WebAssign NumberLine tool to locate points and graph intervals and inequalities on a number line graph.  
Points mode: use the WebAssign NumberLine tool to indicate point positions on a number line graph.  
See **Answering NumberLine Questions** on page 133 |
<table>
<thead>
<tr>
<th>Question Type</th>
<th>Visual Example and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Graphing</strong></td>
<td>Use the WebAssign graphing tool to create a graph. See Answering Graphing Questions on page 136</td>
</tr>
</tbody>
</table>

![WebAssign graphing tool](image-url)

Plot the line $y = x + 2$.
**Question Type**

**MarvinSketch**

Use MarvinSketch to draw chemical structures for your response. MarvinSketch supports drawing and grading of Lewis structures, reactions, and mechanisms.

See Answering MarvinSketch Questions on page 143
**Question Type**

**JME**

Use the Java Molecular Editor (JME) tool to draw chemical structures for your response.

See Answering JME Questions on page 149

---

**Show My Work**

Use Show My Work to demonstrate your reasoning or the process you used to answer the question.

See Showing Your Work on page 70.
Answering Questions

Working on an assignment consists of answering questions on the assignment and then submitting your answers to WebAssign. Depending on the question, you might type your answer in a text box, select a multiple-choice answer, graph a function, enter chemistry notation, or use a number of other tools to specify your answer. The question might have one part or many parts. A few question behaviors are common to most questions in WebAssign.

Question Names

The question name is often displayed in your assignment. Because the questions on your assignment might be different from your classmates' assignments, or listed in a different order, always refer to the question name if you need to ask your instructor about a question.

Randomized Values

Randomized values are the variable data in questions. Many questions in WebAssign use randomized values, which are usually displayed in red. Depending on how your instructor set up the assignment, the randomized values that you see for a question will often be different from the values on your classmates' assignments.

**Important:** If your instructor enabled it, the randomized values on your assignment, question, or question part might change. Always check your answers to make sure they are based on the information in the question at the time you submit the assignment.

If your instructor has enabled new randomizations, you can use the New Randomization button to generate new randomized values in a question after you have reached the set number of available submissions for the current randomized values.

Answer Format Tips

If enabled, answer format tips display information about the kind of answer that is expected (for example, a mathematical expression or a number). Answer format tips are displayed when you click the field or select it using the keyboard.

Practice Questions

If enabled, you can click Practice Another Version to open the question in a new window with different randomized values. This lets you attempt the
question without using any submissions or receiving any credit, so you can be sure that you understand the problem before you answer it in your assignment.

**Submitting and Saving Answers**

After you answer the question, you can, if enabled, save your answer. You might do this if you are not sure of your answer and want to come back to it later.

**Important:** In order to receive credit for your answer, you must submit your answer to WebAssign.

**Submitting Your Answers**

After answering questions on your assignment, you must submit your answers to WebAssign to receive credit. Depending on how your instructor set up the assignment, you can often submit answers more than once before the assignment due date. This gives you an opportunity to submit different answers to questions that you answered incorrectly the first time.

**Important:**

- Your answers are not automatically submitted. To receive credit for your answers, you must submit them.
- Do not wait until the last minute to submit an assignment. Assignment cutoff times are determined by the clock of the WebAssign server, not by the clock on your computer. Every effort is made to ensure that these server clocks are accurate. If the assignment cutoff time is 10:00 P.M., you cannot submit the assignment after 10:00 P.M. according to the WebAssign server, regardless of the time displayed on your computer.

If enabled for the assignment, you can save your answers so you can revise them later before submitting them to WebAssign. Your saved answers are not scored and receive no credit.

**Viewing Submission Rules and Allowed Submissions**

Each time you submit answers to WebAssign, you use a submission. When you have used all of your allowed submissions, you cannot change your answers, even if the assignment due date has not passed. Depending on how your instructor set up the assignment, the number of allowed submissions might be counted for each question part, for each question, or for the entire assignment.

There are three different assignment submission rules. The rule that is used is displayed at the top of your assignment.
Rule 1 You submit answers by question part: for this assignment, the number of submissions for each answer box is counted independently. The number of submissions remaining changes only if you submit a new or changed answer.

With this rule, the following behaviors apply:

- Each question part can have a different number of allowed submissions.
- Each time you submit your answers, only question parts with new or changed answers are submitted.
- No submissions are used for question parts that you did not change.
- To see the used and allowed submissions for each question part, click the plus sign in the question heading. The question parts display numbered labels so you can identify them in the question.

Rule 2 You submit answers by question: for this assignment, once the total number of submissions for a question reaches the number of allowed submissions, you can no longer submit additional answers. The number of submissions remaining changes only if you submit a new or changed answer.

With this rule, the following behaviors apply:

- Each question can have a different number of allowed submissions.
Each time you submit your answers, only questions with new or changed answers are submitted. However, the entire question is submitted, including unanswered question parts and question parts for which you did not change your answer.

No submissions are used for questions that you did not change.

The used and allowed submissions for each question are shown at the top of the question.

Rule 3 You submit an entire assignment: For this assignment, you must submit all answers at once. You have a specified number of times that you can submit this assignment.

With this rule, the following behaviors apply:

- The number of allowed submissions is set for the assignment as a whole.
- Each time you submit your answers, all of your answers for the assignment are submitted, including unanswered questions and questions for which you did not change your answer.
- The used and allowed submissions for the assignment are shown at the top of the assignment.

To view the submission rules and how many submissions you have used:

1. If the assignment for which you want to see submission information is not already open, then open it.

2. To see how submissions are counted for the assignment, read the Assignment Submission rule at the top of the assignment.

3. To see how many submissions are allowed and how many submissions you have used, view a different part of the assignment depending on the submission rule.
   - For question part submission, click the plus sign in the question heading and review the submissions used for each question part.
   - For question submission, view the submissions information in the question heading.
• For assignment submission, view the submissions information at the top of the assignment.

Submissions are always displayed as `used_submissions/allowed_submissions`, where

• `used_submissions` is the number of submissions you have used.
• `allowed_submissions` is the total number of submissions that you are allowed to use.

**See Also:**
Viewing Assignment Scoring Details on page 157
Viewing Your Previous Answers for a Question on page 87

---

**Submitting Answers**

There are multiple ways to submit answers in WebAssign.

**To submit your answers for grading:**

• Depending on the submission rules for the assignment, you can submit your answers in one or more of the following ways.

<table>
<thead>
<tr>
<th>To do this</th>
<th>Do this</th>
<th>Allowed for these submission rules</th>
</tr>
</thead>
</table>
| **Submit one question part at a time** | 1. Enter your answer for a question part.  
2. At the bottom of the question, click **Submit Answer**.  
This submits only the changed question parts for the current question. | For this assignment, you...  
• submit answers by question parts. |
| **Submit one question at a time** | 1. Enter your answers for the question.  
2. At the bottom of the question, click **Submit Answer**.  
Depending on the submission rule, either the entire question is submitted or only the changed question parts. | For this assignment, you...  
• submit answers by question parts.  
• submit answers by questions. |
<table>
<thead>
<tr>
<th>To do this</th>
<th>Do this</th>
<th>Allowed for these submission rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submit multiple changed questions</td>
<td>1. Enter your answers for more than one question.</td>
<td>For this assignment, you…* submit answers by question parts.* submit answers by questions.</td>
</tr>
<tr>
<td></td>
<td>2. At the bottom of a question, click <strong>Submit Assignment</strong>.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The <strong>Submit Answer</strong> button changes to <strong>Submit Assignment</strong> if other questions have changes that have not been submitted or saved.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This submits all changed questions on the assignment. Your saved work is submitted only for the current question.</td>
<td></td>
</tr>
<tr>
<td>Submit the entire assignment</td>
<td>1. Enter your answers for all questions on the assignment.</td>
<td>For this assignment, you…* submit answers by question parts.* submit answers by questions.</td>
</tr>
<tr>
<td></td>
<td>2. At the bottom of the assignment, click <strong>Submit Assignment</strong>.</td>
<td>* submit the entire assignment.</td>
</tr>
<tr>
<td></td>
<td>Depending on the submission rule, either the assignment is submitted as a whole, all changed questions are submitted, or only changed question parts are submitted.</td>
<td></td>
</tr>
<tr>
<td>Submit your saved work for a question</td>
<td>1. Click in the question for which you saved your work.</td>
<td>For this assignment, you…* submit answers by question parts.* submit answers by questions.</td>
</tr>
<tr>
<td></td>
<td>2. At the bottom of the question, click <strong>Submit Answer</strong>.</td>
<td>* submit the entire assignment.</td>
</tr>
<tr>
<td></td>
<td>Depending on the submission rule, either the entire question is submitted or only the changed question parts.</td>
<td></td>
</tr>
<tr>
<td>Submit your saved work for the entire assignment</td>
<td>At the bottom of the assignment, click <strong>Submit Assignment</strong>.</td>
<td>For this assignment, you…* submit answers by question parts.* submit answers by questions.</td>
</tr>
<tr>
<td></td>
<td>Depending on the submission rule, either the assignment is submitted as a whole, all changed questions are submitted, or only changed question parts are submitted.</td>
<td>* submit the entire assignment.</td>
</tr>
</tbody>
</table>

**Important:** Do not use the ENTER key to submit answers. Your answers might not be submitted.
Note: You must click in a question to see the Submit Answer or Submit Assignment button at the bottom of the question.

See Also:
Saving Your Answers on page 83

Viewing Question Feedback

After you submit a question, question part, or assignment, you usually receive feedback on your answers. This feedback might be a mark indicating whether or not you answered a question correctly, or it might include information to help you understand the problem. After the due date, you might see the answer key or a worked solution to the problem. Use this feedback as an opportunity to learn, and if you have more time and submissions, to change your answers on questions that you missed.

Important: What feedback you see depends on both the question itself and on the options that your instructor set for the assignment. Tell your instructor if you want to see more feedback on future assignments.

Marks

If shown, marks indicate whether the most recent answer you submitted was correct or incorrect.

Note: Marks are never shown for short-answer, essay, file-upload, and pencilPad question parts, or for Show My Work, since these are graded by your instructor. However, you can see any comments that your instructor made about your answers. See Viewing Assignment Scoring Details on page 157.

<table>
<thead>
<tr>
<th>Mark</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>The answer you submitted is correct.</td>
</tr>
<tr>
<td>✗</td>
<td>The answer you submitted is not correct.</td>
</tr>
</tbody>
</table>
The answer you submitted is partially correct. Often, this means one of two things:

- Your answer is numerically correct, but is specified with an incorrect number of significant digits or decimal places.
- Your answer uses valid units, but is numerically incorrect.

The answer you submitted is incorrect because it is based on incorrect values, but your calculation is valid.

Your current answer is not correct, but you have received credit because your answer was correct on a previous submission.

Your answer might be correct or incorrect; more feedback is available when you click the mark.

**Note:** Some icons have different meanings when they are shown below a question or question part score.

When you change your answer for a question part, its mark changes to gray until you submit a new answer. This indicates that the mark relates only to your last submitted answer and not to your changed answer.

**See Also:**
- Question Score on page 158
- Question Part Score on page 160

**Feedback and Hints**

If the mark displays a feedback bubble, you can click the mark to see feedback designed to help your understanding of the material.

Feedback might be shown in other ways, as well. Some questions display hints after a specific number of submissions, or if your answer demonstrates a partial understanding of the question. The chemPad tool displays feedback for the chemical expression that you entered.
Worked Solutions

Some questions provide a worked solution that shows how the correct answer is obtained. Depending on how your instructor set up the assignment, the solution might be shown only after the assignment due date is passed, or after you have used all of your submissions.

![Solution Example]

Answer Keys

Depending on how your instructor set up the assignment, you might be able to see answer keys indicated with the key icon in the assignment. The answer key indicates a correct answer provided by the question, but might not be the only acceptable answer.

There are three times when the answer key might be displayed:

1. In tutorial questions, if you skip a step, the answer key is displayed for that step before the due date. This allows you to continue with the tutorial.
2. If allowed by your instructor, answer keys might be displayed automatically before the due date, usually after a specified number of submissions.
3. If allowed by your instructor, the button might be displayed after the assignment due date has passed. Click this button to see the answer keys for all questions on the assignment.

**Note:** If you view the answer key, your instructor will probably not grant you an extension for the assignment. Only your instructor can grant an extension.

See Also:
Answering Tutorial Questions on page 98

Answers That Cannot Be Understood

If your answer contains one or more syntax errors that prevent WebAssign from being able to grade it, WebAssign displays the message Your answer cannot be
understood or graded. Depending on your instructor, answers with syntax errors might be counted as incorrect submissions.

Often, the problem is a simple typographical error that is easy to spot and correct. After correcting the error, submit your answer again.

**Common Errors**

Some of the most common errors are listed here.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Incorrect</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brackets or braces instead of parentheses.</td>
<td>4*{x+3}</td>
<td>4*(x+3)</td>
</tr>
<tr>
<td>Unpaired parentheses.</td>
<td>(1+2)+3</td>
<td>((1+2)+3)</td>
</tr>
<tr>
<td>Missing part of the expression.</td>
<td>50*</td>
<td>50*3</td>
</tr>
<tr>
<td>Too many consecutive operators.</td>
<td>x+++++2</td>
<td>x+2</td>
</tr>
<tr>
<td>Unrecognized symbol.</td>
<td>$4.00</td>
<td>4.00</td>
</tr>
<tr>
<td></td>
<td>4&amp;6</td>
<td>4+6</td>
</tr>
</tbody>
</table>

**Errors Specific to Numerical Questions**

The following errors are common in questions that require you to enter a number with or without a unit.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Incorrect</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Misspelled unit.</td>
<td>3456 met/sec</td>
<td>3456 m/s</td>
</tr>
<tr>
<td>Specifying a unit when none is required.</td>
<td>3 m</td>
<td>3</td>
</tr>
</tbody>
</table>

**Note:** If displayed, check the answer format tip to see if units are required.

|                                | Incorrect          | Correct          |
|                                | 2*x+3              | 2*10+3           |
|                                | 3(14)              | 3*14             |
|                                | 2^3                | 2**3             |

**Errors Specific to mathPad, calcPad, and physPad Questions**

The following errors are common in mathPad, calcPad, or physPad questions, as well as older symbolic questions that require calculator notation.
### Problem

<table>
<thead>
<tr>
<th>Incorrect</th>
<th>Correct</th>
</tr>
</thead>
</table>
| Incorrect variables. Variable names are case-sensitive (x is not the same as X). If the question specifies Greek letters or symbols such as ℓ, do not substitute English letters. | 3X  
3α  
3ℓ |
| Comma in number. | 5,000  
5000 |
| Do not use ** to specify exponents. | 2**3  
2^3 |
| Do not use uppercase E in scientific notation. | 1.2E15  
1.2e15 |

**Note:** In mathPad, calcPad, or physPad, typing $2^3$ displays $2^3$.

### See Also:
- **Answering Numerical Questions** on page 104
- **Answering Symbolic Questions with Calculator Notation** on page 112
- **Answering mathPad Questions** on page 115
- **Answering calcPad Questions** on page 118
- **Answering physPad Questions** on page 122
- **Entering Math Notation in mathPad, calcPad, and physPad** on page 126
- **Types of Questions** on page 52

### Showing Your Work

Some questions include a final question part labeled Show My Work. Use Show My Work to demonstrate your reasoning or the process you used to answer the question.

For each question, the Show My Work header indicates whether Show My Work is required or optional.

**Important:**
- Show My Work might be optional for some questions and required for other questions on the same assignment.
- If Show My Work is required, it counts toward your assignment score. You will tentatively receive full credit when you submit your work, but your instructor might change your Show My Work score after reviewing your answer.
Show My Work does not restrict the number of submissions you can make. Until the assignment due date passes, you can update Show My Work as many times as you need to.

To Answer Show My Work in a Question:

1. If needed, expand the Show My Work question part.

2. Click in the Show My Work answer box and type your answer.
   The Show My Work answer box displays a standard set of tools for formatting your text; if needed, hover your mouse over any of the toolbar buttons to see its description.

3. When you think that your answer is correct, submit it to WebAssign.

   **Important:** In order to receive credit for your answer, you must submit it to WebAssign.

Uploading Files to Show Your Work

You can upload one or more files that explain how you arrived at your answer. You can also open or remove files that you uploaded.

**Note:** Uploading files to Show My Work requires Adobe Flash Player, version 10 or later. You can obtain the free Flash plug-in from www.adobe.com/products/flashplayer/.
Before uploading a file, prepare it to ensure that it can easily be viewed.

| Image files | • Use one of the following standard file formats: PNG, GIF, JPG.  
• Make sure your picture is clear and that your work can easily be read.  
• Make sure your picture shows all of your work and is not missing anything at the top, bottom, or sides.  
• Crop your picture so that it shows only your work and nothing else. |
| Documents, presentations, or spreadsheets | Use the file format and version specified by your instructor. If your instructor did not specify a file format, consider saving your document in a standard format like PDF to ensure that your instructor can open it. |

**To upload a file for Show My Work:**

1. In the **Uploaded Files** section of the Show My Work question part, click **Upload File**.  
A file browser window opens.  
2. Select the file that you want to upload.  
3. Depending on your browser, click either **Open** or **Choose**.  
The file you uploaded is displayed in the Uploaded Files list.  

4. Optional: You can open or remove a file that you uploaded.  
   • To open a file, click its name in the **Uploaded Files** list. Depending on your browser settings, you might be prompted to save the file or to open it with another application on your computer.  
   • To remove a file, click the trash can icon, and then click **OK** to confirm that you want to remove it.  

**Displaying Images to Show Your Work**

You can insert an image in your work from the Web or from a file that you uploaded by specifying its location.

**To display an image in the Show My Work box:**

1. Copy the Web address of the image or uploaded image file.
1. Right-click either the file name of your uploaded file or an image displayed in a Web page and click Properties.

2. In the Properties window, select and copy the address.

Firefox
- To copy the address of your uploaded file, right-click the file name and click Copy Link Location.
- To copy the address of an image displayed in a Web page, right-click the image and click Copy Image Location.

Safari
- To copy the address of your uploaded file, right-click the file name and click Copy Link.
- To copy the address of an image displayed in a Web page, right-click the image and click Copy Image Address.

Chrome
- To copy the address of your uploaded file, right-click the file name and click Copy Link Address.
- To copy the address of an image displayed in a Web page, right-click the image and click Copy Image URL.

2. Click in the Show My Work box where you want to insert the image.

3. Click 👍.

4. Paste the Web address of the image into URL and click OK.

5. Optional: Type a Description of the image.

The image is displayed.

**Entering Math Expressions to Show Your Work**

You can enter mathematical expressions in your work.

**To enter a mathematical expression:**

1. In the Show My Work toolbar, click Insert Math.
   The toolbar changes to display buttons for entering math expressions.
2. Use the keyboard and buttons to enter your math expression.

<table>
<thead>
<tr>
<th>To do this</th>
<th>Do this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter variables.</td>
<td>Type the variable name. Variables are automatically italicized.</td>
</tr>
<tr>
<td>Enter lowercase or uppercase Greek letters.</td>
<td>Type a backslash () followed by the lowercase or capitalized name of the letter, for example, \delta to insert δ or \Delta to insert Δ.</td>
</tr>
<tr>
<td>Display or hide additional buttons.</td>
<td>Click Functions, Symbols, Operators, Calculus, Vectors, or Greek.</td>
</tr>
<tr>
<td>Move the insertion point.</td>
<td>Press the HOME, END, and arrow keys.</td>
</tr>
<tr>
<td>Move to the next part of the expression.</td>
<td>Press TAB.</td>
</tr>
<tr>
<td>Move to the previous part of the expression.</td>
<td>Press SHIFT+TAB.</td>
</tr>
<tr>
<td>Copy the entire expression.</td>
<td>Press CTRL+C.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> You cannot select or copy only part of the expression.</td>
</tr>
<tr>
<td>Cut the entire expression.</td>
<td>Press CTRL+X.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> This removes the entire expression. To undo, press CTRL+V to paste the expression.</td>
</tr>
<tr>
<td>Paste the entire expression.</td>
<td>Press CTRL+V.</td>
</tr>
<tr>
<td></td>
<td><strong>Important:</strong> This replaces the entire expression with an expression that you previously cut or copied. There is no undo.</td>
</tr>
<tr>
<td>Delete the character to the left of the insertion point, the selected expression, or notation such as fractions.</td>
<td>Press BACKSPACE.</td>
</tr>
</tbody>
</table>
### Examples: Entering Math Notation

The following examples illustrate entry of some common expressions.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Do this</th>
<th>To display this</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A simple expression with integers</strong></td>
<td>Type 2x+52500</td>
<td>2x + 52500</td>
</tr>
</tbody>
</table>
| **A polynomial with a fractional coefficient**  | 1. Click \[\frac{1}{2}\]  
2. Type 1 and press TAB  
3. Type 2 and press TAB  
4. Type \(x^2\) and press TAB  
5. Type +4x+2 | \[\frac{1}{2}x^2 + 4x + 2\] |
| **A simple inequality**                         | 1. Type x  
2. Click **Symbols** > ≥  
3. Type -4 | \(x \geq -4\) |
| **A square root**                               | Type `sqrt(x)` | \(\sqrt{x}\) |
| **A cube root**                                 | 1. Click \[^3\sqrt{\_}\]  
2. Type 3TABx | \(\sqrt[3]{x}\) |
| **An expression involving pi and Euler’s number** | Type `\pi+e^2` | \(\pi + e^2\) |
| **The natural logarithm of an absolute value**  | 1. Click **Functions** > **ln**  
2. Type \(|x|\) | \(\ln(|x|)\) |
<table>
<thead>
<tr>
<th>Expression</th>
<th>Do this</th>
<th>To display this</th>
</tr>
</thead>
<tbody>
<tr>
<td>A complex number</td>
<td>Type $2+3i$</td>
<td>$2 + 3i$</td>
</tr>
<tr>
<td>A vector in vector bracket form</td>
<td>1. Click $&lt;$</td>
<td>$(12,15,22)$</td>
</tr>
<tr>
<td></td>
<td>2. Type $12,15,22$</td>
<td></td>
</tr>
</tbody>
</table>

**General Math**

The following notation can be entered in Show My Work boxes.

**Note:** In addition to the keyboard shortcuts listed in this topic, some symbols can be typed using the keyboard shortcuts for your operating system; for example, you can press ALT+0247 on Windows to type ÷.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decimal number</td>
<td>0123456789.</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Fractions</td>
<td></td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Mixed Numbers</td>
<td></td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Addition</td>
<td>+</td>
<td>Operators &gt; +</td>
<td></td>
</tr>
<tr>
<td>Subtraction</td>
<td>-</td>
<td>Operators &gt; −</td>
<td></td>
</tr>
<tr>
<td>Multiplication</td>
<td>Operators &gt; ×</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Division</td>
<td>Operators &gt; ÷</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Plus or minus</td>
<td>Operators &gt; ±</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minus or plus</td>
<td>Operators &gt; ±</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parentheses</td>
<td>(</td>
<td>(</td>
<td>A closing parenthesis is automatically inserted.</td>
</tr>
<tr>
<td>Equal</td>
<td>=</td>
<td>Symbols &gt; =</td>
<td></td>
</tr>
<tr>
<td>Greater than</td>
<td>&gt;</td>
<td>Symbols &gt; &gt;</td>
<td></td>
</tr>
<tr>
<td>Greater than or equal to</td>
<td>Symbols &gt; ≥</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Less than</td>
<td>&lt;</td>
<td>Symbols &gt; &lt;</td>
<td></td>
</tr>
<tr>
<td>Less than or equal to</td>
<td>Symbols &gt; ≤</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Approximately equal</td>
<td>Symbols &gt; ≈</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Notation</td>
<td>Keyboard</td>
<td>Button</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------</td>
<td>--------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Not equal</td>
<td>Symbols &gt; ≠</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Absolute value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pi</td>
<td>\pi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infinity</td>
<td>\infty</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Imaginary unit</td>
<td>i</td>
<td>Symbols &gt; i</td>
<td></td>
</tr>
<tr>
<td>Factorial</td>
<td>n!</td>
<td>Functions &gt; !</td>
<td></td>
</tr>
<tr>
<td>hbar</td>
<td>h</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
</tbody>
</table>

### Bases, Exponents, Roots, and Logarithms

The following notation can be entered in Show My Work boxes.

**Note:** In addition to the keyboard shortcuts listed in this topic, some symbols can be typed using the keyboard shortcuts for your operating system; for example, you can press ALT+0247 on Windows to type ÷.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exponent</td>
<td>^</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base or subscript</td>
<td>_ (underscore)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exponent and subscript</td>
<td>^n</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>of a variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Square root</td>
<td>sqrt(n)</td>
<td>\sqrt</td>
<td></td>
</tr>
<tr>
<td>nth root</td>
<td>\sqrt[n]</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Exponential function</td>
<td>e^n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural logarithm</td>
<td>Functions &gt; ln</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Power of 10</td>
<td>10^n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logarithm (base 10)</td>
<td>log</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>General log</td>
<td>log</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
</tbody>
</table>
### Algebraic Notation

The following notation can be entered in Show My Work boxes.

**Note:** In addition to the keyboard shortcuts listed in this topic, some symbols can be typed using the keyboard shortcuts for your operating system; for example, you can press ALT+0247 on Windows to type ÷.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>Type variables exactly as specified in the question.</td>
<td></td>
<td>Variables are automatically displayed in italics.</td>
</tr>
<tr>
<td>Lowercase Greek letter</td>
<td>\letter_name</td>
<td>Greek &gt; letter</td>
<td>For example, type \alpha, \pi, or \theta.</td>
</tr>
<tr>
<td>Uppercase Greek letter</td>
<td>\Letter_name</td>
<td>Greek &gt; letter</td>
<td>For example, type \Delta or \Omega.</td>
</tr>
</tbody>
</table>

### Set and Interval Notation

The following notation can be entered in Show My Work boxes.

**Note:** In addition to the keyboard shortcuts listed in this topic, some symbols can be typed using the keyboard shortcuts for your operating system; for example, you can press ALT+0247 on Windows to type ÷.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set delimiters (braces)</td>
<td>{a,b}</td>
<td>Operators &gt; ∅</td>
<td>A closing brace is automatically inserted.</td>
</tr>
<tr>
<td>Closed interval (brackets)</td>
<td>[a,b]</td>
<td>Operators &gt; ∪</td>
<td>A closing bracket is automatically inserted.</td>
</tr>
<tr>
<td>Open interval (parentheses)</td>
<td>(a,b)</td>
<td>Symbols &gt; ⌀</td>
<td>A closing parenthesis is automatically inserted.</td>
</tr>
<tr>
<td>Empty set</td>
<td></td>
<td>Operators &gt; ∅</td>
<td></td>
</tr>
<tr>
<td>Union</td>
<td></td>
<td>Operators &gt; ∪</td>
<td></td>
</tr>
<tr>
<td>Intersection</td>
<td></td>
<td>Operators &gt; ∩</td>
<td></td>
</tr>
<tr>
<td>Subset</td>
<td></td>
<td>Operators &gt; ⊂</td>
<td></td>
</tr>
<tr>
<td>Superset</td>
<td></td>
<td>Operators &gt; ⊃</td>
<td></td>
</tr>
<tr>
<td>Element of</td>
<td></td>
<td>Operators &gt; ∈</td>
<td></td>
</tr>
<tr>
<td>Not an element of</td>
<td></td>
<td>Operators &gt; ∈</td>
<td></td>
</tr>
</tbody>
</table>
Trigonometric Functions

The following notation can be entered in Show My Work boxes.

**Note:** In addition to the keyboard shortcuts listed in this topic, some symbols can be typed using the keyboard shortcuts for your operating system; for example, you can press ALT+0247 on Windows to type ÷.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees</td>
<td></td>
<td>$^\circ$</td>
<td></td>
</tr>
<tr>
<td>Sine</td>
<td>Functions &gt; sine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cosine</td>
<td>Functions &gt; cos</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tangent</td>
<td>Functions &gt; tan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cosecant</td>
<td>Functions &gt; csc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secant</td>
<td>Functions &gt; sec</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cotangent</td>
<td>Functions &gt; cot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inverse sine (arcsine)</td>
<td>Functions &gt; sin$^{-1}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inverse cosine (arccosine)</td>
<td>Functions &gt; cos$^{-1}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inverse tangent (arctangent)</td>
<td>Functions &gt; tan$^{-1}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inverse cosecant (arccosecant)</td>
<td>Functions &gt; csc$^{-1}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inverse secant (arcsecant)</td>
<td>Functions &gt; sec$^{-1}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inverse cotangent (arccotangent)</td>
<td>Functions &gt; cot$^{-1}$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Vector Notation

The following notation can be entered in Show My Work boxes.

**Note:** In addition to the keyboard shortcuts listed in this topic, some symbols can be typed using the keyboard shortcuts for your operating system; for example, you can press ALT+0247 on Windows to type ÷.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vector bracket</td>
<td>Vectors &gt; $\vec{v}$</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Arrow vector</td>
<td>Vectors &gt; $\vec{a}$</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Unit vector (hat vector)</td>
<td>Vectors &gt; $\hat{v}$</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Cross product</td>
<td>Vectors &gt; $\times$</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
</tbody>
</table>
Calculus

The following notation can be entered in Show My Work boxes.

**Note:** In addition to the keyboard shortcuts listed in this topic, some symbols can be typed using the keyboard shortcuts for your operating system; for example, you can press ALT+0247 on Windows to type ÷.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dot product</td>
<td>Vectors &gt; ·</td>
<td></td>
<td>You cannot use the keyboard.</td>
</tr>
<tr>
<td>Summation</td>
<td>Operators &gt; ∑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summation with index</td>
<td>Operators &gt; Σ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Derivative</td>
<td>Calculus &gt; ∂</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partial derivative</td>
<td>Calculus &gt; ∂</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Del</td>
<td>Calculus &gt; V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indefinite integral</td>
<td>Calculus &gt; ∫</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definite integral</td>
<td>Calculus &gt; ∫</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integral over a region</td>
<td>Calculus &gt; ∫</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed integral</td>
<td>Calculus &gt; ∫</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed integral over a region</td>
<td>Calculus &gt; ∫ a</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Viewing Instructor Comments for Show My Work

After you show your work on an assignment, your instructor or a TA can change the score or add comments and files to help you better understand the material. Review these comments when studying for a quiz, test, or examination.

To view instructor comments for your work:

1. Open the assignment.
   a) From your Home page or My Assignments page for a class, click the name of the assignment you want to open.
   b) If necessary, acknowledge any assignment restriction notices or enter the assignment password and click Continue.

Your instructor’s comments and your score for each Show My Work question part are displayed below your answer.
Optional: If your instructor provided any files to help you, click the file name to open the file. Depending on your browser settings, you might be prompted to save the file or to open it with another application on your computer.

**New Randomization**

If your instructor has enabled new randomizations, you can use the New Randomization button to generate new randomized values in a question after you have reached the set number of available submissions for the current randomized values.

When you click the New Randomization button, the randomized values in the question are replaced with new randomized values:

- If the button is displayed at the end of an assignment, clicking it generates new randomized values for all questions in the assignment.
- If the button is displayed after a question, clicking it generates a new randomized values for that question.

The New Randomization button is only displayed after you have used the set number of submissions for the current randomized values but still have submissions left for an assignment. For example, suppose the assignment you are working on allows two submissions per randomized value and five total submissions per question:

1. You submit two answers for a question and the New Randomization button is displayed.
**Note:** If your instructor has enabled it, you can view the answer key and/or solution for the current randomization after you have used the specified number of submissions. You can use this information to work through how to solve the problem and apply this knowledge when answering the question with the next set of randomized values.

2. You click the **New Randomization** button and receive new randomized values for that question.

3. You submit two answers for the new randomized values and the **New Randomization** button is displayed.

4. You click the **New Randomization** button and receive new randomized values for that question.

You have one of the original five submissions remaining to answer the question with the new randomized values.

The number of submission attempts for each set of randomized values, as well as the total possible number of submissions, is set by your instructor.

**Generating New Randomized Values**

If your instructor has enabled new randomizations, you can generate new randomized values in questions. Before you can generate a new randomization you must use all of the submissions for the current randomized values.

New randomized values can either be generated for a single question, or for all questions in an assignment, depending on how your instructor has set up randomization:

- If the **New Randomization** button is displayed at the end of an assignment, clicking it generates new randomizations for all randomized values in the assignment.

- If the **New Randomization** button is displayed after a question, clicking it generates a new randomization for the randomized values in that question.

**Note:** Not all questions support randomization, so you might have some questions on an assignment that you will not be able to generate new randomizations for.

1. Use the maximum number of submissions for the current randomized values. The **New Randomization** button is now available.

**Note:** If your instructor has enabled it, you can view the answer key and/or solution for the current randomization after you have used the specified number of submissions. You can use this information to work through how to solve the problem and apply this knowledge when answering the question with the next set of randomized values.

2. Click the **New Randomization** button.

New randomized values are provided in the question(s) and the **New Randomization** button is no longer available.
Saving Your Answers

If enabled by your instructor, you can save your progress on an assignment without submitting your answers. You can then view your saved work later when you are working on the assignment again. You might want to save an answer that you expect to revise later. You might also want to save your progress as you work on an assignment that allows only one submission.

![Important:](#)

**Important:** Your saved answers:

- are not scored
- do not receive credit
- cannot be reviewed by your instructor
- do not use any submissions

In order to receive credit, you must submit your answers before the assignment due date.

Depending on the submission rules for the assignment, you can save your answers without using a submission in one or more of the following ways.

<table>
<thead>
<tr>
<th>To do this</th>
<th>Do this</th>
<th>Allowed for these submission rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Save your work for one question</td>
<td>1. Enter your answers for a question.</td>
<td>For this assignment, you...</td>
</tr>
<tr>
<td></td>
<td>2. At the bottom of the question, click <strong>Save Progress</strong>.</td>
<td>• submit answers by question parts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• submit answers by questions.</td>
</tr>
<tr>
<td></td>
<td>This saves your answers only for the current question.</td>
<td></td>
</tr>
<tr>
<td>Save your work for multiple questions</td>
<td>1. Enter your answers for more than one question.</td>
<td>For this assignment, you...</td>
</tr>
<tr>
<td></td>
<td>2. At the bottom of a question, click <strong>Save Assignment Progress</strong>.</td>
<td>• submit answers by question parts.</td>
</tr>
<tr>
<td></td>
<td><img src="#" alt="Note:" /> The <strong>Save Progress</strong> button changes to <strong>Save Assignment Progress</strong> if other questions have changes that have not been submitted or saved.</td>
<td>• submit answers by questions.</td>
</tr>
<tr>
<td></td>
<td>This saves your answers for all changed questions on the assignment.</td>
<td></td>
</tr>
<tr>
<td>To do this</td>
<td>Do this</td>
<td>Allowed for these submission rules</td>
</tr>
<tr>
<td>-----------</td>
<td>---------</td>
<td>-----------------------------------</td>
</tr>
</tbody>
</table>
| **Save your work for the entire assignment** | 1. Enter your answers for all questions on the assignment.  
2. At the bottom of the assignment, click **Save Assignment Progress**.  
This saves your answers for all changed questions on the assignment. | For this assignment, you...  
• submit answers by question parts.  
• submit answers by questions.  
• submit the entire assignment. |
| **Discard your saved work for a question** | Click **Revert to Last Response** at the bottom of the question.  
Your last submitted answer is shown for the question instead of the answer you saved. | For this assignment, you...  
• submit answers by question parts.  
• submit answers by questions.  
• submit the entire assignment. |

**Note:**
- Questions with saved work display a yellow border on the left and bottom with the message **Viewing Saved Work**.
- You must click in a question to see the **Save Progress** or **Save Assignment Progress** button at the bottom of the question.
- Marks and scores displayed with a question apply to the submitted answers for that question only, not to your saved work.
- You cannot view previous versions of saved work, including work that you might have saved and then changed before submitting it.
This figure shows four questions in an assignment.

- Question 1 has a saved answer, indicated by the yellow saved work border and the Viewing Saved Work message. It also displays the Revert to Last Response link.
- Question 2 has an answer that has not been submitted or saved.
- Question 3 has an answer that has not been submitted or saved. Because the student is working on the question, it displays the buttons Submit Assignment and Save Assignment Progress at the bottom.
- Question 4 has no answer yet.

At the bottom of the assignment, the buttons Submit Assignment and Save Assignment Progress are displayed.

See Also:
Submitting Answers on page 64
Viewing Your Previous Answers for a Question on page 87
Making Notes About a Question

You can add a note to yourself in any question. Your note can be about anything; for example, you might remind yourself to use a specific formula.

Note:
- Anything you enter on your assignments, including notes, can be read by your instructor.
- Unless requested by your instructor, do not use notes to communicate with your instructor; instructors are not alerted when you add notes to questions, and there is no way for your instructor to reply to your note.

To make a note about a question:

1. Click the Notes icon in the question heading. The My Notes window opens.
2. Type your note in the Notes field, and click Save. The note is saved.
3. Click Close this window to close the My Notes window.

Viewing a Note About a Question

If you have previously saved a note for a question, the notes icon changes to a representation of a notebook.

To view a note about a question:

1. Click the Notes icon in the question heading. The My Notes window opens and displays the saved note.
2. Click Close this window to close the My Notes window.

Editing a Saved Note About a Question

You can edit the notes you have already saved.

To edit a saved note about a question:

1. Click the Notes icon in the question heading. The My Notes window opens and displays the saved note.
2. Click Edit.
3. Edit your note in the Notes field, and click Save. The note is saved.
4. Click Close this window to close the My Notes window.
Viewing Your Previous Answers for a Question

If viewing your previous answers is enabled for an assignment, you can see your previous answers to a question.

Depending on how your instructor set up the assignment, you might be able to see:

- only the most recent answer you submitted
- both the most recent answer and any previous answers you submitted

If you are allowed to see your most recent answers, they are displayed in the assignment when you open it.

Note: If you have saved work for a question, your saved answer is displayed instead of your submitted answer.

To view your previous answers:

To view all of your submitted answers for a question, click Previous Answers in the question heading.

The Previous Answers page opens, displaying all the answers you have submitted for the question.

See Also:
Viewing Submission Rules and Allowed Submissions on page 61
Scores and Grades on page 155
Viewing Question Feedback on page 66
Saving Your Answers on page 83

Previous Answers Page

The Previous Answers page displays all of the answers you submitted for a question. You cannot change your answers in this page.

To open the Previous Answers page, click Previous Answers in the question heading of a question on your assignment. This page opens in a new window.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment Name and Question Number</td>
<td>The assignment name and question number are displayed at the top of the page.</td>
</tr>
<tr>
<td>Submission Header</td>
<td>Each of your submissions for the question is displayed in order, with the first submission at the top and the most recent submission at the bottom. Each submission displays a header with the sequence number of the submission and the points earned. For assignments allowing question part submission, the time when the submission was made is also displayed.</td>
</tr>
</tbody>
</table>

**Note:** For assignments with question part submission, the number of submissions made might look like more than the allowed number of submissions. This is because each time you submitted new answers, submissions were used only for the changed question parts.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answers</td>
<td>The answers submitted for each question part are displayed for each submission. If an answer box was empty when the question was submitted, it displays <em>(No Response)</em>. Answers cannot be changed in the Previous Answers page.</td>
</tr>
<tr>
<td>Marks</td>
<td>If enabled by your instructor, marks are displayed for each answer box to indicate whether or not the answer was correct.</td>
</tr>
<tr>
<td>Note:</td>
<td>Marks on the Previous Answers page do not indicate whether more credit was earned for a previous response.</td>
</tr>
<tr>
<td>Question Feedback</td>
<td>If available, question feedback is displayed for each submission.</td>
</tr>
<tr>
<td>Answer Keys</td>
<td>Answer keys are displayed only for those submissions after which the answer key was displayed on the assignment.</td>
</tr>
<tr>
<td>New Randomization</td>
<td>If shown, the New Randomization banner indicates that the question values changed after you clicked New Randomization in the assignment.</td>
</tr>
</tbody>
</table>

The date when each answer was submitted is displayed only for assignments with question part submission.

The following items are not displayed in the Previous Answers page. You can view these items (if available) in the assignment.

- Links to "pop-up" questions that do not count toward your score. This includes tutorial and practice questions and Practice Another Version.
- Links to eBooks or other learning resources.
- Detailed score information for each question part.
- Assignment scoring and submission rules.
- Worked solutions.

**See Also:**
Viewing Submission Rules and Allowed Submissions on page 61
You can answer most questions in WebAssign using standard text entry, multiple-choice, or multiple-select fields that are similar to those used in other computer applications. This section describes the various ways that you can enter answers in WebAssign.

This chapter contains the following topics:

- Answering Fill-In-The-Blank Questions
- Answering Matching Questions
- Answering Multiple-Choice Questions
- Answering Multiple-Select Questions
- Answering Identification Questions
- Answering pencilPad Questions
- Answering Essay Questions
- Uploading Files for Questions
- Answering Multiple-Part Questions
- Answering Poll Questions
Answering Fill-In-The-Blank Questions

You can enter short text answers in fill-in-the-blank questions.

To answer a fill-in-the-blank question:

Enter a response in each answer box. Spelling counts, so check your answers before submitting the assignment.

Depending on your instructor, capitalization and extra spaces might not matter, but sometimes they do. For chemistry questions, for example, na is not the correct chemical symbol of sodium; you must enter Na.

See Also:
Submitting Answers on page 64

Answering Matching Questions

A matching question requires you to match information in one column to information in a second column. You answer these questions by selecting the appropriate match from a drop-down.

To answer matching question:

Select the correct match from the drop-down. Select an answer for each item until all of the items are matched.

See Also:
Submitting Answers on page 64
Answering Multiple-Choice Questions

Multiple-choice questions can have either option buttons beside the possible answers or drop-down menus for selecting your answer.

To answer a multiple-choice question:

Select your response under each question by selecting an answer from a drop-down list or an option button. To change your answer, select another one. Doing so clears your original selection. You can only select one.

Tip: When you submit a correct answer to a multiple-choice question that has option buttons, you will see a green outline around the option buttons in addition to the correct answer icon. Incorrect answers are surrounded by a red outline.

Correct answers are displayed as illustrated in the following figure:

Incorrect answers are displayed as illustrated in the following figure:

See Also:
Submitting Answers on page 64

Answering Multiple-Select Questions

Multiple-select questions in WebAssign use check boxes. You can select more than one answer for this type of question.
To answer a multiple-select question:

Select one or more check boxes for your response. To clear a check box, click the checked box again.

See Also: Submitting Answers on page 64

Answering Identification Questions

An identification question requires you to identify the correct response by clicking it in the image.

To answer this kind of question, you must use either Firefox or Internet Explorer.

To answer an identification question:

Mouse over the image and click the correct answer.

See Also: Clicking Part of an Image To Answer a Question Does Not Work on page 31
Submitting Answers on page 64
Answering pencilPad Questions

The pencilPad tool lets you draw or write in your own handwriting using your mouse or a tablet PC. You can show your work, draw diagrams or simply provide more information about how you worked a problem.

To draw or write using pencilPad:

1. Click the draw tool.
   The pointer is displayed as a pencil.

2. Move the pointer to form the object or words you want in the note pad space.

3. You can do any of the following:
   - Click **Erase** to erase part or all of your drawing or text. The pointer is displayed as an eraser.
   - Click **Clear** to delete everything on the page.
   - Click **Add** to add a new page.
   - Click **Remove** to delete the page.
   - Click the arrows to go to the previous or next page.
   - Click **Print** to print all pages of your work.
   - Click **Help** to get help with how to use pencilPad.

4. When you are done, click **Save** or **Submit**. Blank pages are removed.

See Also:

Submitting Answers on page 64
Answering Essay Questions

Answer essay questions by entering your response in the box provided. After your instructor grades essays, your scores and instructor comments are displayed on the assignment, if enabled.

To answer an essay question:

Click in the answer box and type your answer.

**Important:** By default, you receive full credit after submitting your answer. After your instructor grades your answer your score can change. For example, if there are 5 points in an essay question, you might see that you have 5 out of 5 points when you first submit it. If your score is actually 4 out of 5 points, you will see the score change after the instructor enters the correct score of 4 points in WebAssign.

See Also:
Submiting Answers on page 64

Uploading Files for Questions

Answer file upload questions by preparing the requested file in the required format and then uploading it. Unless your instructor tells you differently, your file should be smaller than 100 K.

To upload your file to a question:

1. Depending on your browser, click either **Browse** or **Choose File**.
2. Find and select your file.

3. Depending on your browser, click either **Open** or **Choose**. The location of your file is entered into the answer space.

4. If you want to change the file you uploaded to another file, click either **Browse** or **Choose File** and repeat the previous steps.

5. When you have finished selecting your file, click **Submit**. When you do so, your instructor can view and grade your file.

**See Also:**
* Submitting Answers on page 64*

### Answering Multiple-Part Questions

A multiple-part question requires you to provide one answer for each part of the question. Formatting for a multiple-part question can be fill-in-the-blanks, drop-down lists, check boxes, or option buttons.

**To answer a multiple-part question:**

Provide your response by entering an answer in an answer box or selecting an answer from a drop-down list, option button, or check box.
Answering Tutorial Questions

A tutorial question is a type of Multiple-Part question that is intended to help you work through learning a concept. Typically, when you answer a tutorial question, you must answer the parts of a question in the order they are presented.

For each part you must either:

- provide a correct answer
- skip the step (when you skip a step you cannot go back and answer it later)
- reach the maximum number of incorrect submissions for a step

The answer key is always displayed for a step after all submissions have been used, the step is answered correctly, or the step was skipped.

A tutorial question can be a:

- Scored tutorial: the tutorial is part of working through the question
- Unscored tutorial: the tutorial opens in a new pop-up window after you click a button

See Also:

Answer Keys on page 68

Answering Scored Tutorial Questions

This task describes how to answer scored tutorial questions.

To answer a scored tutorial question:

1. Answer the first part of the question by providing an answer and clicking Submit, or by clicking Skip.

   - If you choose to skip you will not receive credit for this part of the question.
   - If you answer a question incorrectly, submit a new answer. You can continue to submit new answers until you answer the question correctly or run out of answer attempts. The maximum number of answer attempts is set by your instructor.
After you answer the question correctly, reach the maximum number of attempts, or skip the question the correct answer is displayed.

**Reasoning Problem**

Although Evel Knievel never succeeded in jumping over the Grand Canyon, he was famous for jumping (with the help of his motorcycle) over, among other things, 14 large trusses. This jump covered an approximate distance 134 ft. What was Mr. Knievel’s minimum initial velocity for this jump in meters per second? Ignore air drag.

**Part 1 of 4 - Recognize the Principles**

Which of the following are critical to solving this problem?

- constant acceleration
- projectile motion
- $a = g = 9.8 \text{ m/s}^2$
- Newton’s 2nd law
- independence of x and y vector components

Submit  Skip

After you answer the question correctly, reach the maximum number of attempts, or skip the question the correct answer is displayed.

**Reasoning Problem**

Although Evel Knievel never succeeded in jumping over the Grand Canyon, he was famous for jumping (with the help of his motorcycle) over, among other things, 14 large trusses. This jump covered an approximate distance 134 ft. What was Mr. Knievel’s minimum initial velocity for this jump in meters per second? Ignore air drag.

**Part 2 of 4 - Sketch the Problem**

Which of the following statements best describes the physical condition that Evel Knievel is experiencing?

- Evel Knievel experiences constant acceleration along the y-axis throughout the trip with no acceleration along the x-axis after he has left the ground.
- Evel Knievel experiences constant acceleration along the x-axis throughout the trip with near constant acceleration along the y-axis except at the highest point of motion in which case the acceleration goes to zero.
- Evel Knievel experiences constant acceleration along the y-axis throughout the trip with decreasing acceleration along the x-axis after he has left the ground.
- Evel Knievel experiences decreasing acceleration along the x-axis throughout the trip with increasing acceleration along the y-axis.

Submit  Skip

You are now ready to utilize your knowledge of projectile motion to solve this problem.
2. Continue to answer the parts of the question in the order they are presented by providing an answer and clicking **Submit**, or by clicking **Skip**. Remember, you do not receive credit for any parts of the question that are skipped.

You have completed the tutorial when you can no longer submit answers.

See Also:
Submitting Answers on page 64

Answering Unscored Tutorial Questions
This task describes how to answer unscored tutorial questions.

**To answer an unscored tutorial question:**

1. Click the button to launch the tutorial popup window. The tutorial button can vary in appearance.

2. Answer the questions in the tutorial by providing an answer and clicking **Submit**.

   You can also skip questions to see the correct answer without affecting your score.

See Also:
Submitting Answers on page 64

Answering Poll Questions
Poll questions gather information. All responses are scored correct. Poll questions can be any type of question.

1. **What grade do you expect to receive in this course?**
   - A
   - B
   - C
   - D
   - F

   [Submit New Answers To Question 1] [Save Week]

2. **What is your favorite color?**

   [Submit New Answers To Question 2] [Save Week]
See Also:
Submitting Answers on page 64
This chapter contains the following topics:

- Answering Numerical Questions
- Answering Symbolic Questions with Calculator Notation
- Answering mathPad Questions
- Answering calcPad Questions
- Answering physPad Questions
- Entering Math Notation in mathPad, calcPad, and physPad
- Answering NumberLine Questions
- Answering Graphing Questions
- Answering chemPad Questions
- Answering MarvinSketch Questions
- Answering JME Questions

Answers to math and science questions often require using special notation. WebAssign gives you the tools necessary to provide these answers.
Answering Numerical Questions

Numerical questions require you to enter a number for the answer. The question might also require you to enter units or to specify the correct number of significant figures. The kind of answer that is expected should be clear from the question.

If your instructor has enabled answer format tips, numerical questions are also indicated by an answer format tip that instructs you to enter a number. The exact text of the answer format tip might vary, depending on the required form of the answer and whether significant figures or units will be checked.

If your instructor has enabled it, the sigfig icon is displayed beside the answer box for questions that check for significant figures.

To answer a numerical question:

To answer a numerical question, type a number using the following notation:

<table>
<thead>
<tr>
<th>Notation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>A decimal number</td>
<td>304.5</td>
</tr>
<tr>
<td>A fraction</td>
<td>3045/10</td>
</tr>
<tr>
<td>Scientific (&quot;e&quot;) notation</td>
<td>3.045e2</td>
</tr>
</tbody>
</table>

Each of the examples in this table are equivalent expressions. Do not use commas or spaces to separate digits in your answer.

Unless otherwise indicated, many numerical questions also allow you to enter the following simple arithmetic expressions:

<table>
<thead>
<tr>
<th>Notation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>A sum (+)</td>
<td>300+4.5</td>
</tr>
<tr>
<td>A difference (-)</td>
<td>404.5-100</td>
</tr>
</tbody>
</table>
Notation | Example
--- | ---
A product (*) | 30.45*10
A quotient (/) | 3045/10
An exponent (**) | 3.045*10**2

The standard order of operations is observed: parenthetical expressions are evaluated first, followed by exponents, products and quotients, and then sums and differences.

**Tip:** By default, numerical questions require the answer to be within 2% of the correct value. However, particular questions, classes, or instructors might require greater accuracy, and will usually inform you if that is the case.

See Also:
- Submitting Answers on page 64
- Answers That Cannot Be Understood on page 68

### Answering Numerical Questions With Units

Numerical questions with units require you to enter both a number and a unit for the answer, for example, 10 inches. The kind of answer that is expected should be clear from the question.

If enabled by your instructor, the answer format tip should indicate if units are required. The question might also require you to specify the correct number of significant figures.

**To answer a numerical question with units:**

If the question requires you to specify units in your answer, type a number followed by a space and a unit, for example, 2500 meters.

You can use standard abbreviations for units, and you can specify any compatible unit. For example, the responses 2500 meters, 2.5 km, and 2.5e+6 mm are all equivalent. Be sure to spell the unit or abbreviation correctly.

**Tip:** Your instructor might award partial credit if you specify the correct units, even if your answer is not correct.

### Rules for Units

Observe the following rules when specifying units.

<table>
<thead>
<tr>
<th>Rule</th>
<th>Incorrect</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type a space between the number and the unit.</td>
<td>20g</td>
<td>20 g</td>
</tr>
<tr>
<td></td>
<td>20 g</td>
<td></td>
</tr>
<tr>
<td>Units are case-sensitive.</td>
<td>1 minute = 60 S</td>
<td>1 minute = 60 s</td>
</tr>
</tbody>
</table>
## Units for Numerical Questions

Many different unit names and abbreviations can be used in numerical questions requiring units.

### Rules for Units

Observe the following rules when specifying units.

<table>
<thead>
<tr>
<th>Rule</th>
<th>Incorrect</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type a space between the number and the unit.</td>
<td>20g</td>
<td>20 g</td>
</tr>
<tr>
<td>Units are case-sensitive.</td>
<td>1 minute = 60 S</td>
<td>1 minute = 60 s</td>
</tr>
<tr>
<td>Do not combine multiple values and units.</td>
<td>3 minutes 15 seconds</td>
<td>3.25 minutes</td>
</tr>
<tr>
<td>To change the dimension of a unit, follow the unit with a caret (^)</td>
<td>3 square miles</td>
<td>3 mi^2</td>
</tr>
<tr>
<td>and an exponent. Do not use the words “square” or “cubic.” Do not</td>
<td>3 mi**2</td>
<td></td>
</tr>
<tr>
<td>use two asterisks (**) to specify the exponent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To divide a unit, use /. Do not use “per.”</td>
<td>miles per hour</td>
<td>miles/hour</td>
</tr>
<tr>
<td>To multiply a unit, use a space or an asterisk. Do not use a raised</td>
<td>kW-h</td>
<td>kW*h</td>
</tr>
<tr>
<td>dot or hyphen.</td>
<td>kilowatt-hour</td>
<td>kilowatt hour</td>
</tr>
<tr>
<td>Many unit names accept singular and plural forms interchangeably.</td>
<td>3 mis</td>
<td>3 mi</td>
</tr>
<tr>
<td>Do not pluralize unit abbreviations.</td>
<td></td>
<td>3 miles</td>
</tr>
<tr>
<td>Do not enter a fraction for the number when units are required.</td>
<td>3/4 inch</td>
<td>0.75 inch</td>
</tr>
</tbody>
</table>
To divide a unit, use /. Do not use "per."

<table>
<thead>
<tr>
<th>Rule</th>
<th>Incorrect</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>To divide a unit, use /. Do not use “per.”</td>
<td>miles per hour</td>
<td>miles/hour</td>
</tr>
<tr>
<td>To multiply a unit, use a space or asterisk. Do not use a raised dot or hyphen.</td>
<td>kW·h</td>
<td>kW*h</td>
</tr>
<tr>
<td>Many unit names accept singular and plural forms interchangeably. Do not pluralize unit abbreviations.</td>
<td>3 mis</td>
<td>3 mi</td>
</tr>
<tr>
<td>Do not enter a fraction for the number when units are required.</td>
<td>3/4 inch</td>
<td>0.75 inch</td>
</tr>
</tbody>
</table>

**Units**

This is not an exhaustive list, but includes the most commonly used units and abbreviations. For SI units, most derived units are not listed here.

- **Note:** For units having different values in different countries, the U.S. value is used.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Abbreviation</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ampere</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>angstrom</td>
<td>Å, ångström</td>
<td></td>
</tr>
<tr>
<td>astronomical unit</td>
<td>au, AU</td>
<td></td>
</tr>
<tr>
<td>atmosphere</td>
<td>atm</td>
<td></td>
</tr>
<tr>
<td>atomic mass unit</td>
<td>u, amu</td>
<td></td>
</tr>
<tr>
<td>bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>becquerel</td>
<td>Bq</td>
<td></td>
</tr>
<tr>
<td>british thermal unit</td>
<td>btu</td>
<td></td>
</tr>
<tr>
<td>bushel</td>
<td>bu</td>
<td></td>
</tr>
<tr>
<td>calorie</td>
<td>cal</td>
<td></td>
</tr>
<tr>
<td>carat</td>
<td>ct</td>
<td></td>
</tr>
<tr>
<td>cc</td>
<td></td>
<td>Cubic centimeter. Do not use cubic centimeter.</td>
</tr>
<tr>
<td>cm^3</td>
<td></td>
<td>Cubic centimeter. Do not use cubic centimeter.</td>
</tr>
<tr>
<td>coulomb</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>cup</td>
<td></td>
<td></td>
</tr>
<tr>
<td>curie</td>
<td>Ci</td>
<td></td>
</tr>
<tr>
<td>Unit</td>
<td>Abbreviation</td>
<td>Notes</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>day</td>
<td>d</td>
<td></td>
</tr>
<tr>
<td>diopter</td>
<td></td>
<td>The alternative spelling “dioptre” can also be used.</td>
</tr>
<tr>
<td>dollar</td>
<td>$</td>
<td>The unit must follow the number, as in $3.25. Do not specify $3.25.</td>
</tr>
<tr>
<td>farad</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>foot</td>
<td>ft</td>
<td>Alternatively, feet.</td>
</tr>
<tr>
<td>foot^3/second</td>
<td>cfs</td>
<td></td>
</tr>
<tr>
<td>gallon/hour</td>
<td>gal/h, gph</td>
<td></td>
</tr>
<tr>
<td>gallon</td>
<td>gal</td>
<td></td>
</tr>
<tr>
<td>grain</td>
<td>gr</td>
<td></td>
</tr>
<tr>
<td>gram</td>
<td>g, gm</td>
<td></td>
</tr>
<tr>
<td>henry</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>hertz</td>
<td>Hz, hz</td>
<td></td>
</tr>
<tr>
<td>horsepower</td>
<td>hp</td>
<td></td>
</tr>
<tr>
<td>hour</td>
<td>h, hr</td>
<td></td>
</tr>
<tr>
<td>inch</td>
<td>in</td>
<td></td>
</tr>
<tr>
<td>joule</td>
<td>J</td>
<td></td>
</tr>
<tr>
<td>kilocalorie</td>
<td>Calorie</td>
<td></td>
</tr>
<tr>
<td>kilogram</td>
<td>kg</td>
<td></td>
</tr>
<tr>
<td>kilometer/hour</td>
<td>kph</td>
<td></td>
</tr>
<tr>
<td>kilowatt hour</td>
<td>kWh</td>
<td></td>
</tr>
<tr>
<td>liter/minute</td>
<td>lpm</td>
<td></td>
</tr>
<tr>
<td>liter/hour</td>
<td>L/h</td>
<td></td>
</tr>
<tr>
<td>liter</td>
<td>L</td>
<td>The alternative spelling “litre” can also be used.</td>
</tr>
<tr>
<td>meter</td>
<td>m</td>
<td>The alternative spelling “metre” can also be used.</td>
</tr>
<tr>
<td>micron</td>
<td></td>
<td></td>
</tr>
<tr>
<td>microsecond</td>
<td>µs, us</td>
<td></td>
</tr>
<tr>
<td>mile/gallon</td>
<td>mpg</td>
<td></td>
</tr>
<tr>
<td>mile/hour</td>
<td>mph</td>
<td></td>
</tr>
<tr>
<td>mile</td>
<td>mi</td>
<td></td>
</tr>
<tr>
<td>minute</td>
<td>min</td>
<td>Use for time only.</td>
</tr>
</tbody>
</table>
### Unit Abbreviation Notes

<table>
<thead>
<tr>
<th>Unit</th>
<th>Abbreviation</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>mmHg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>molar</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>mole</td>
<td>mol</td>
<td></td>
</tr>
<tr>
<td>newton</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>ohm</td>
<td>oz</td>
<td>You cannot use the Ω character.</td>
</tr>
<tr>
<td>partsperbillion</td>
<td>ppb</td>
<td>Uses U.S. definition: $10^{-9}$.</td>
</tr>
<tr>
<td>partspermillion</td>
<td>ppm</td>
<td>Uses U.S. definition: $10^{-6}$.</td>
</tr>
<tr>
<td>partspertrillion</td>
<td>ppt</td>
<td>Uses U.S. definition: $10^{-12}$.</td>
</tr>
<tr>
<td>pascal</td>
<td>Pa, pa</td>
<td></td>
</tr>
<tr>
<td>picometer</td>
<td>pm</td>
<td></td>
</tr>
<tr>
<td>pint</td>
<td>pt</td>
<td></td>
</tr>
<tr>
<td>pound</td>
<td>lb</td>
<td></td>
</tr>
<tr>
<td>proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>psi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>quart</td>
<td>qt</td>
<td></td>
</tr>
<tr>
<td>roentgen</td>
<td>rontgen, röntgen</td>
<td></td>
</tr>
<tr>
<td>second</td>
<td>s, sec</td>
<td>Use for time only.</td>
</tr>
<tr>
<td>sievert</td>
<td>Sv</td>
<td></td>
</tr>
<tr>
<td>tesla</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>torr</td>
<td></td>
<td></td>
</tr>
<tr>
<td>volt</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>watt</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>weber</td>
<td>Wb</td>
<td></td>
</tr>
<tr>
<td>yard</td>
<td>yd</td>
<td></td>
</tr>
<tr>
<td>year</td>
<td>yr</td>
<td></td>
</tr>
</tbody>
</table>

### Combining Prefixes for SI Units

The following prefixes can be combined with SI base units to specify derived units. The derived unit or abbreviation cannot contain a space between the prefix and base unit.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Abbreviation</th>
<th>Value</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>peta</td>
<td>P</td>
<td>$10^{15}$</td>
<td>1.2 Pm</td>
</tr>
<tr>
<td>tera</td>
<td>T</td>
<td>$10^{12}$</td>
<td>2.3 terajoule</td>
</tr>
</tbody>
</table>
### Answering Numerical Questions That Check Significant Figures

Numerical questions that check significant figures require you both to calculate the correct answer and to specify that answer using the correct number of significant digits, for example, 2.3e4. The kind of answer that is expected should be clear from the question.

If your instructor has enabled it, the sigfig icon is displayed beside the answer box for questions that check for significant figures. If enabled, the answer format tip should also indicate if you must specify the correct number of significant figures. The question might also require you to specify units.

**To answer a numerical question that checks significant figures:**

If the question checks for significant figures, type a number with the correct number of significant figures for your answer. The rules WebAssign uses to determine the number of significant figures in a number are shown in the examples below:

<table>
<thead>
<tr>
<th>Example</th>
<th>Significant Figures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1234</td>
<td>4</td>
</tr>
<tr>
<td>500</td>
<td>1</td>
</tr>
</tbody>
</table>
### Example

<table>
<thead>
<tr>
<th>Number</th>
<th>Significant Figures</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0e2</td>
<td>2</td>
</tr>
<tr>
<td>500.</td>
<td>3</td>
</tr>
<tr>
<td>13000</td>
<td>2</td>
</tr>
<tr>
<td>2.000</td>
<td>4</td>
</tr>
<tr>
<td>140e-001</td>
<td>2</td>
</tr>
<tr>
<td>8.20000e3</td>
<td>6</td>
</tr>
<tr>
<td>101.001</td>
<td>6</td>
</tr>
<tr>
<td>41003</td>
<td>5</td>
</tr>
</tbody>
</table>

To express a number like 1000 to 2 or 3 significant figures, you must use scientific notation, for example, 1.0e3 or 1.00e3.

If it is displayed, you can click the sigfig icon to list the rules used for significant figures in WebAssign.

**Tip:** Your instructor might award partial credit if you specify the correct value, even if you do not specify the correct number of significant figures.

---

**Answering Answer-Dependent Numerical Questions**

Some numerical questions have multiple parts that require you to enter estimated or measured values and then perform calculations based on the values you entered. These questions are often used for lab classes to record the results of an experiment and perform analysis of the data.

For these questions, the answer boxes for analyses are not enabled and are displayed with a gray background until you have entered the required values first.

If you click an answer box that is not enabled, a message is displayed indicating that you must complete other answer boxes first.

**To answer answer-dependent numerical questions:**

1. Enter the requested values, specifying units or significant figures if required.
After the required values have been entered, answer boxes for calculations dependent on those values are enabled and are displayed with a white background.

2. Enter your calculations in the appropriate answer boxes, specifying units or significant figures if required.

For these questions, your answers are scored based on the expected range for the question and your analyses are scored based on the values you provided.

• Your answers are marked correct if they are within the expected range and correctly specify units or significant figures, if required.

If your answers are not within the expected range, they are marked incorrect; a prompt might also be displayed indicating why the values were not acceptable.

• Your analyses are marked correct only if your answers are within the expected range and you have performed the calculations correctly, including units and significant figures, if required.

If your answers are not within the expected range but your calculations were correct for the values you provided, an icon is displayed to let you know that your procedure was correct; however, no points are awarded unless both the values and the calculations are correct.

Answering Symbolic Questions with Calculator Notation

Symbolic questions require you to enter a mathematical expression for the answer, but do not display a tool for entering math notation. Instead, you type your answer using calculator notation.

If your instructor has enabled answer format tips, symbolic questions are indicated by one of the following answer format tips when you click in the answer box:

• Enter a mathematical expression
• Enter a mathematical expression or equation with exact values

Symbolic questions are often displayed with the symbolic formatting help button (symbol formatting help). You can click this button to see the allowed notation.

Any response that is equivalent to the answer formula will be graded as correct. For example, 4x+12 would be equivalent to (x+3)4. You can enter an asterisk (*) for multiplication or use implicit multiplication with variables.
To answer a symbolic question:

1. Type your answer using calculator notation and the exact variables specified in the question. Unless the question asks for your answer to be in a specific form, any mathematically correct expression that is equivalent to the key will be accepted as correct.

   A dozen donuts costs $49 less than twelve individual donuts. If $d$ is the cost of a dozen donuts in dollars, what is the formula for the cost of a single donut in cents?

   \[
   \frac{100d + 49}{12}
   \]

2. Click the preview button to see the expression you entered in formatted mathematical notation. This is often important in order to see if you have placed your parentheses correctly.

   Clicking the preview button in the above question would display the following formatted notation:

   \[
   \frac{100d + 49}{12}
   \]

3. Edit your response and preview it again if needed. Submit your response only when the formatted notation is correct.

   **Note:**
   - Angles for trigonometric functions are expressed in radians.
   - Answers are case-sensitive; $x$ and $X$ are not the same.
   - Do not type commas in numbers; 5,280 is not correct.

**See Also:**
- Submitting Answers on page 64
- Answers That Cannot Be Understood on page 68

**Calculator Notation for Symbolic Questions**

Calculator notation for symbolic questions includes a number of operators and functions.

**Note:**
- Angles for trigonometric functions are expressed in radians.
- Answers are case-sensitive; $x$ and $X$ are not the same.
- Do not type commas in numbers; 5,280 is not correct.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Example</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition</td>
<td>+</td>
<td>$x + 1$</td>
<td></td>
</tr>
<tr>
<td>Notation</td>
<td>Keyboard</td>
<td>Example</td>
<td>Notes</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------</td>
<td>---------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Subtraction</td>
<td>-</td>
<td>x - 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-x</td>
<td></td>
</tr>
<tr>
<td>Multiplication</td>
<td>*</td>
<td>4*x</td>
<td>Implicit multiplication is allowed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4x</td>
<td></td>
</tr>
<tr>
<td>Division</td>
<td>/</td>
<td>x/4</td>
<td></td>
</tr>
<tr>
<td>Exponents</td>
<td>^</td>
<td>x**3 or x^3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parentheses</td>
<td>( )</td>
<td>4/(x + 1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3(x + 1)</td>
<td></td>
</tr>
<tr>
<td>Equal</td>
<td>=</td>
<td>y = 10</td>
<td></td>
</tr>
<tr>
<td>Greater than</td>
<td>&gt;</td>
<td>y &gt; 10</td>
<td></td>
</tr>
<tr>
<td>Less than</td>
<td>&lt;</td>
<td>y &lt; 10</td>
<td></td>
</tr>
<tr>
<td>Greater than or equal to</td>
<td>&gt;=</td>
<td>y &gt;= 10</td>
<td></td>
</tr>
<tr>
<td>Less than or equal to</td>
<td>&lt;=</td>
<td>y &lt;= 10</td>
<td></td>
</tr>
<tr>
<td>Absolute value</td>
<td>abs()</td>
<td>abs(-5) = 5</td>
<td></td>
</tr>
<tr>
<td>Square root</td>
<td>sqrt()</td>
<td>sqrt(x/5)</td>
<td></td>
</tr>
<tr>
<td>nth root</td>
<td>rootn()</td>
<td>root5(x - 3)</td>
<td></td>
</tr>
<tr>
<td>Factorial</td>
<td>!</td>
<td>5! = 120</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(x - 1)!</td>
<td></td>
</tr>
<tr>
<td>Trigonometric functions</td>
<td>sin()</td>
<td>sin(2x)</td>
<td>Angles are expressed in radians.</td>
</tr>
<tr>
<td></td>
<td>cos()</td>
<td>atan(pi/4)</td>
<td>Inverse and hyperbolic functions are also supported with notation like atan() and coth().</td>
</tr>
<tr>
<td></td>
<td>tan()</td>
<td>cosh(y)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sec()</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>csc()</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cot()</td>
<td></td>
<td></td>
</tr>
<tr>
<td>π</td>
<td>pi</td>
<td>2 pi x</td>
<td>3.14 is only an approximation of π and is not equivalent for grading.</td>
</tr>
<tr>
<td>Scientific notation</td>
<td>e</td>
<td>1e3 = 1000</td>
<td></td>
</tr>
<tr>
<td>Natural log</td>
<td>ln()</td>
<td>ln(x)</td>
<td></td>
</tr>
<tr>
<td>Euler's number</td>
<td>exp()</td>
<td>exp(x)</td>
<td>Raises Euler's number to the specified power. For example, exp(2) = e^2.</td>
</tr>
<tr>
<td>General log</td>
<td>log_b()</td>
<td>log_2(x + 5)</td>
<td>The specified base must be a natural number.</td>
</tr>
</tbody>
</table>
Examples: Answering Symbolic Questions with Calculator Notation

The following examples illustrate entry of some common expressions.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Type this</th>
<th>Click the preview button to display this</th>
</tr>
</thead>
<tbody>
<tr>
<td>A simple expression with integers</td>
<td>2x+52500</td>
<td>2x + 52500</td>
</tr>
<tr>
<td>A polynomial with a fractional coefficient</td>
<td>(1/2)x^2+4x+2</td>
<td></td>
</tr>
<tr>
<td>A simple inequality</td>
<td>x&gt;=-4</td>
<td>x ≥ -4</td>
</tr>
<tr>
<td>A square root</td>
<td>sqrt(x)</td>
<td></td>
</tr>
<tr>
<td>A cube root</td>
<td>root3(x)</td>
<td></td>
</tr>
<tr>
<td>An expression involving pi and Euler's number</td>
<td>pi+exp(2)</td>
<td>π + exp(2)</td>
</tr>
<tr>
<td>The natural logarithm of an absolute value</td>
<td>ln(abs(x))</td>
<td>ln(</td>
</tr>
<tr>
<td>An inverse tangent in radians</td>
<td>atan(x)</td>
<td>atan(x)</td>
</tr>
</tbody>
</table>

Answering mathPad Questions

WebAssign mathPad questions are displayed with a rectangular answer box similar to answer boxes used for other question types, but when you click a mathPad-enabled answer box, the mathPad palette opens, allowing you to answer the question with a correctly formatted mathematical expression.

**Note:** The mathPad, calcPad, and physPad tools require Flash 10 or higher. You can obtain the free Flash plug-in from www.adobe.com/products/flashplayer/.

To answer a mathPad question:

1. Click the answer box to open the tool palette.
   You cannot use the keyboard to move the insertion point to the answer box. You must use the mouse. The tool palette stays open until you click outside of the answer box.
2. Click the mathPad buttons or type a mathematical expression to answer the question. The expression is displayed in the answer box as you enter it. If necessary, the answer box becomes larger to fit your answer.

Some mathPad buttons insert blue-bordered placeholder boxes to show you where you can type numbers, variables, or expressions. For example, if you insert a fraction, placeholder boxes are displayed for both the numerator and denominator. Use the keyboard or mouse to navigate to each placeholder box, and insert the values or expressions you need to complete your answer.

You can add math notation using the keyboard and mathPad buttons, and edit your response in the answer box.

<table>
<thead>
<tr>
<th>To do this</th>
<th>Do this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter math notation.</td>
<td>Click mathPad buttons and type.</td>
</tr>
<tr>
<td>Enter variables.</td>
<td>Type the variable name using the case and spelling specified in the question. Variables are automatically italicized.</td>
</tr>
<tr>
<td>Enter lowercase or uppercase Greek letters.</td>
<td>Type either the lowercase or capitalized name of the letter, for example, delta to insert δ or Delta to insert Δ.</td>
</tr>
<tr>
<td>Display or hide additional mathPad buttons.</td>
<td>Click Functions, Symbols, Relations, Sets, or Trig.</td>
</tr>
<tr>
<td>Move the insertion point in the answer box.</td>
<td>Press the HOME, END, and arrow keys.</td>
</tr>
<tr>
<td>Select part of the expression.</td>
<td>Press either SHIFT+LEFT ARROW or SHIFT+RIGHT ARROW</td>
</tr>
<tr>
<td>Select the entire expression.</td>
<td>Press CTRL+A</td>
</tr>
<tr>
<td>Copy the selected part of the expression.</td>
<td>Press CTRL+C</td>
</tr>
<tr>
<td>Cut the selected part of the expression.</td>
<td>Press CTRL+X</td>
</tr>
<tr>
<td>Paste into the expression.</td>
<td>You can only paste in the same answer box that you copied or cut from. Press CTRL+V</td>
</tr>
</tbody>
</table>
To do this | Do this
---|---
Delete the character to the left of the insertion point, the selected expression, or notation such as fractions. | Press BACKSPACE
Delete the character to the right of the insertion point, the selected expression, or notation such as fractions. | Press DELETE

Note:

Typing

- Answers are case-sensitive; x and X are not the same.
- Typing + on the numeric keypad inserts =. To insert the plus sign using the numeric keypad, press SHIFT+PLUS SIGN.
- Some characters cannot be entered from the keyboard when using Firefox on a Mac. These include <, >, and |. Use the buttons to insert these characters.

Numbers

- Do not type commas in numbers; 5,280 is not correct.
- When entering scientific notation, always use a lowercase e, for example, 1.23e-5.

Trigonometry

- Express angles for trigonometric functions in radians.
- Use parentheses to specify the arguments of trigonometric functions, for example, sin(2x).
  
If you omit parentheses, spaces are used to determine the argument of the function and your answer might not be graded as you expect. For example:

\[
\sin 3x \text{ (without a space)} \quad \text{is graded as} \quad \sin(3) \times x \\
\sin 3x \text{ (with a space)} \quad \text{is graded as} \quad \sin(3x)
\]

- Function names are displayed in roman type.

See Also:

Submitting Answers on page 64
Answers That Cannot Be Understood on page 68
Entering Math Notation in mathPad, calcPad, and physPad on page 126

Examples: Entering Math Notation with mathPad

The following examples illustrate entry of some common expressions.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Do this</th>
<th>To display this</th>
</tr>
</thead>
<tbody>
<tr>
<td>A simple expression with integers</td>
<td>Type 2x+52500</td>
<td>2x + 52500</td>
</tr>
<tr>
<td>Expression</td>
<td>Do this</td>
<td>To display this</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------</td>
</tr>
</tbody>
</table>
| A polynomial with a fractional coefficient    | 1. Type $1/2$ and press the RIGHT ARROW key  
  2. Type $x^2$ and press the RIGHT ARROW key  
  3. Type $+4x+2$                                  | $\frac{1}{2}x^2 + 4x + 2$           |
| A simple inequality                           | Type $x \geq -4$                                                         | $x \geq -4$                         |
| A square root                                 | Type $\sqrt{x}$                                                         | $\sqrt{x}$                          |
| A cube root                                   | 1. Click Functions > $\sqrt[3]{ \phantom{x}}$  
  2. Type 3 and press the RIGHT ARROW key  
  3. Type $x$                                    | $\sqrt[3]{x}$                      |
| An expression involving pi and Euler's number | 1. Type pi+  
  2. Click Functions > $\text{e}^x$  
  3. Type 2                                                               | $\pi + e^2$                        |
| The natural logarithm of an absolute value    | Type either of the following: $\ln(|x|)$  
  $\ln(\text{abs}(x))$                               | $\ln(|x|)$                         |
| A complex number                              | 1. Type 2+3  
  2. Click Symbols > $i$                                             | $2 + 3i$                           |

**Answering calcPad Questions**

WebAssign calcPad questions are displayed with a rectangular answer box similar to answer boxes used for other question types, but when you click a calcPad-enabled answer box, the calcPad palette opens, allowing you to answer the question with a correctly formatted mathematical expression.

- **Note:** The mathPad, calcPad, and physPad tools require Flash 10 or higher. You can obtain the free Flash plug-in from [www.adobe.com/products/flashplayer/](http://www.adobe.com/products/flashplayer/).

**To answer a calcPad question:**

1. Click the answer box to open the tool palette.
You cannot use the keyboard to move the insertion point to the answer box. You must use the mouse. The tool palette stays open until you click outside of the answer box.

2. Click the calcPad buttons or type a mathematical expression to answer the question. The expression is displayed in the answer box as you enter it. If necessary, the answer box becomes larger to fit your answer.

Some calcPad buttons insert blue-bordered placeholder boxes to show you where you can type numbers, variables, or expressions. For example, if you insert a fraction, placeholder boxes are displayed for both the numerator and denominator. Use the keyboard or mouse to navigate to each placeholder box, and insert the values or expressions you need to complete your answer.

You can add math notation using the keyboard and calcPad buttons, and edit your response in the answer box.

<table>
<thead>
<tr>
<th>To do this</th>
<th>Do this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter math notation.</td>
<td>Click calcPad buttons and type.</td>
</tr>
<tr>
<td>Enter variables.</td>
<td>Type the variable name using the case and spelling specified in the question. Variables are automatically italicized.</td>
</tr>
<tr>
<td>Enter lowercase or uppercase Greek letters.</td>
<td>Type either the lowercase or capitalized name of the letter, for example, delta to insert δ or Delta to insert Δ.</td>
</tr>
<tr>
<td>Display or hide additional calcPad buttons.</td>
<td>Click Functions, Relations, Trig, Vectors, Sets, or Greek.</td>
</tr>
<tr>
<td>Move the insertion point in the answer box.</td>
<td>Press the HOME, END, and arrow keys.</td>
</tr>
<tr>
<td>Select part of the expression.</td>
<td>Press either SHIFT+LEFT ARROW or SHIFT +RIGHT ARROW</td>
</tr>
<tr>
<td>Select the entire expression.</td>
<td>Press CTRL+A</td>
</tr>
<tr>
<td>Copy the selected part of the expression.</td>
<td>Press CTRL+C</td>
</tr>
<tr>
<td>Cut the selected part of the expression.</td>
<td>Press CTRL+X</td>
</tr>
<tr>
<td>To do this</td>
<td>Do this</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Paste into the expression.</td>
<td>Press CTRL+V</td>
</tr>
<tr>
<td>You can only paste in the same answer box that you copied or cut from.</td>
<td></td>
</tr>
<tr>
<td>Delete the character to the left of the insertion point, the selected</td>
<td>Press BACKSPACE</td>
</tr>
<tr>
<td>expression, or notation such as fractions.</td>
<td></td>
</tr>
<tr>
<td>Delete the character to the right of the insertion point, the selected</td>
<td>Press DELETE</td>
</tr>
<tr>
<td>expression, or notation such as fractions.</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

**Typing**
- Answers are case-sensitive; x and X are not the same.
- Typing + on the numeric keypad inserts =. To insert the plus sign using the numeric keypad, press SHIFT+PLUS SIGN.
- Some characters cannot be entered from the keyboard when using Firefox on a Mac. These include <, >, and |. Use the buttons to insert these characters.

**Numbers**
- Do not type commas in numbers; 5,280 is not correct.
- When entering scientific notation, always use a lowercase e, for example, 1.23e-5.

**Trigonometry**
- Express angles for trigonometric functions in radians.
- Use parentheses to specify the arguments of trigonometric functions, for example, sin(2x).
  - If you omit parentheses, spaces are used to determine the argument of the function and your answer might not be graded as you expect. For example:
    - sin3x (without a space) is graded as sin(3) × x
    - sin 3x (with a space) is graded as sin(3x)
- Function names are displayed in roman type.

**See Also:**
- Submitting Answers on page 64
- Answers That Cannot Be Understood on page 68
- Entering Math Notation in mathPad, calcPad, and physPad on page 126
Examples: Entering Math Notation with calcPad

The following examples illustrate entry of some common expressions.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Do this</th>
<th>To display this</th>
</tr>
</thead>
<tbody>
<tr>
<td>A simple expression with integers</td>
<td>Type 2x+52500</td>
<td>2x + 52500</td>
</tr>
<tr>
<td>A polynomial with a fractional coefficient</td>
<td>1. Type 1/2 and press the RIGHT ARROW key</td>
<td>( \frac{1}{2}x^2 + 4x + 2 )</td>
</tr>
<tr>
<td></td>
<td>2. Type x^2 and press the RIGHT ARROW key</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Type +4x+2</td>
<td></td>
</tr>
<tr>
<td>A simple inequality</td>
<td>Type x&gt;=-4</td>
<td>( x \geq -4 )</td>
</tr>
<tr>
<td>A square root</td>
<td>Type sqrt(x)</td>
<td>( \sqrt{x} )</td>
</tr>
<tr>
<td>A cube root</td>
<td>1. Click Functions &gt; ( \sqrt[3]{\phantom{1}} )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Type 3 and press the RIGHT ARROW key</td>
<td>( \sqrt[3]{x} )</td>
</tr>
<tr>
<td></td>
<td>3. Type x</td>
<td></td>
</tr>
<tr>
<td>An expression involving pi and Euler’s number</td>
<td>1. Type pi+</td>
<td>( x + e^2 )</td>
</tr>
<tr>
<td></td>
<td>2. Click Functions &gt; ( e^2 )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Type 2</td>
<td></td>
</tr>
<tr>
<td>The natural logarithm of an absolute value</td>
<td>Type either of the following:</td>
<td>( \ln(</td>
</tr>
<tr>
<td></td>
<td>( \ln(</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>( \ln(\text{abs}(x)) )</td>
<td></td>
</tr>
<tr>
<td>A complex number</td>
<td>1. Type 2+3</td>
<td>2 + 3i</td>
</tr>
<tr>
<td></td>
<td>2. Click ( i )</td>
<td></td>
</tr>
<tr>
<td>A vector in vector bracket form</td>
<td>1. Click Vectors &gt; ( \left[ \phantom{1} \right] )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Type 12, 15, 22</td>
<td>( {12, 15, 22} )</td>
</tr>
</tbody>
</table>
### Answering physPad Questions

WebAssign physPad questions are displayed with a rectangular answer box similar to answer boxes used for other question types, but when you click a physPad-enabled answer box, the physPad palette opens, allowing you to answer the question with correctly formatted physics notation.

**Note:** The mathPad, calcPad, and physPad tools require Flash 10 or higher. You can obtain the free Flash plug-in from [www.adobe.com/products/flashplayer/](http://www.adobe.com/products/flashplayer/).

#### To answer a physPad question:

1. Click the answer box to open the tool palette.

   You cannot use the keyboard to move the insertion point to the answer box. You must use the mouse. The tool palette stays open until you click outside of the answer box.

2. Click the physPad buttons or type an expression to answer the question. The expression is displayed in the answer box as you enter it. If necessary, the answer box becomes larger to fit your answer.

Some physPad buttons insert blue-bordered placeholder boxes to show you where you can type numbers, variables, or expressions. For example, if you insert a fraction, placeholder boxes are displayed for both the numerator and
denominator. Use the keyboard or mouse to navigate to each placeholder box, and insert the values or expressions you need to complete your answer. You can add notation using the keyboard and physPad buttons, and edit your response in the answer box.

<table>
<thead>
<tr>
<th>To do this</th>
<th>Do this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter physics notation.</td>
<td>Click physPad buttons and type.</td>
</tr>
<tr>
<td>Enter variables.</td>
<td>Type the variable name using the case and spelling specified in the question. Variables are automatically italicized.</td>
</tr>
<tr>
<td>Enter lowercase or uppercase Greek letters.</td>
<td>Type either the lowercase or capitalized name of the letter, for example, delta to insert ( \delta ) or Delta to insert ( \Delta ).</td>
</tr>
<tr>
<td>Display or hide additional physPad buttons.</td>
<td>Click Vectors, Math, Trig, Relations, Symbols, or Greek.</td>
</tr>
<tr>
<td>Move the insertion point in the answer box.</td>
<td>Press the HOME, END, and arrow keys.</td>
</tr>
<tr>
<td>Select part of the expression.</td>
<td>Press either SHIFT+LEFT ARROW or SHIFT +RIGHT ARROW</td>
</tr>
<tr>
<td>Select the entire expression.</td>
<td>Press CTRL+A</td>
</tr>
<tr>
<td>Copy the selected part of the expression.</td>
<td>Press CTRL+C</td>
</tr>
<tr>
<td>Cut the selected part of the expression.</td>
<td>Press CTRL+X</td>
</tr>
<tr>
<td>Paste into the expression.</td>
<td>Press CTRL+V</td>
</tr>
<tr>
<td>You can only paste in the same answer box that you copied or cut from.</td>
<td></td>
</tr>
<tr>
<td>Delete the character to the left of the insertion point, the selected expression, or notation such as fractions.</td>
<td>Press BACKSPACE</td>
</tr>
<tr>
<td>Delete the character to the right of the insertion point, the selected expression, or notation such as fractions.</td>
<td>Press DELETE</td>
</tr>
</tbody>
</table>
Note:

Typing

• Answers are case-sensitive; x and X are not the same.
• Typing + on the numeric keypad inserts =. To insert the plus sign using the numeric keypad, press SHIFT+PLUS SIGN.
• Some characters cannot be entered from the keyboard when using Firefox on a Mac. These include <, >, and |. Use the buttons to insert these characters.

Numbers

• Do not type commas in numbers; 5,280 is not correct.
• When entering scientific notation, always use a lowercase e, for example, 1.23e-5.

Trigonometry

• Express angles for trigonometric functions in radians.
• Use parentheses to specify the arguments of trigonometric functions, for example, sin(2x).
  If you omit parentheses, spaces are used to determine the argument of the function and your answer might not be graded as you expect. For example:
  \(\sin 3x\) (without a space) is graded as \(\sin(3) \times x\)
  \(\sin 3x\) (with a space) is graded as \(\sin(3x)\)
• Function names are displayed in roman type.

See Also:
Submitting Answers on page 64
Answers That Cannot Be Understood on page 68
Entering Math Notation in mathPad, calcPad, and physPad on page 126

Examples: Entering Physics Notation with physPad

The following examples illustrate entry of some common expressions.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Do this</th>
<th>To display this</th>
</tr>
</thead>
</table>
| An expression with numbers and subscripted variables | 1. Type \(1/2\) and press the RIGHT ARROW key  
2. Type \(m_2\) and press the RIGHT ARROW key  
3. Type \(+4m_3\) | \(m_2 + 4m_3\) |
<p>| A square root | Type (\text{sqrt}(gh)) | (\sqrt{gh}) |</p>
<table>
<thead>
<tr>
<th>Expression</th>
<th>Do this</th>
<th>To display this</th>
</tr>
</thead>
<tbody>
<tr>
<td>A cube root</td>
<td>1. Click Math &gt; $\sqrt[3]{m_1 m_2 m_3}$ 2. Type 3 and press the RIGHT ARROW key 3. Type $m_1$ and press the RIGHT ARROW key 4. Type $m_2$ and press the RIGHT ARROW key 5. Type $m_3$ and press the RIGHT ARROW key</td>
<td>$\sqrt[3]{m_1 m_2 m_3}$</td>
</tr>
<tr>
<td>An expression involving Euler's number</td>
<td>1. Click Math &gt; $e^{2}$ 2. Type 3</td>
<td>$e^{2}$</td>
</tr>
<tr>
<td>An expression involving hbar ($\hbar$)</td>
<td>1. Type 3 2. Click Symbols &gt; $\hbar$ 3. Type $^2$ 4. Type $^2\hbar$</td>
<td>$3\hbar^2$</td>
</tr>
<tr>
<td>A vector in hatted i-j-k form</td>
<td>1. Type 5 2. Click Vectors &gt; $\hat{i}$ 3. Type $\hat{i}$ and press the RIGHT ARROW key 4. Type $+24$ 5. Click Vectors &gt; $\hat{j}$ 6. Type $\hat{j}$ and press the RIGHT ARROW key 7. Type $+4$ 8. Click Vectors &gt; $\hat{k}$ 9. Type $k$</td>
<td>$5\hat{i} + 24\hat{j} + 4\hat{k}$</td>
</tr>
<tr>
<td>A vector in bold i-j-k form</td>
<td>1. Type 5 2. Click Vectors &gt; $\vec{i}$ 3. Type $\vec{i}$ and press the RIGHT ARROW key 4. Type $+24$ 5. Click Vectors &gt; $\vec{j}$ 6. Type $\vec{j}$ and press the RIGHT ARROW key 7. Type $+4$ 8. Click Vectors &gt; $\vec{k}$ 9. Type $k$</td>
<td>$5\vec{i} + 24\vec{j} + 4\vec{k}$</td>
</tr>
<tr>
<td>A vector in vector bracket form</td>
<td>1. Click Vectors &gt; [5, 24, 4] 2. Type [5, 24, 4]</td>
<td>&lt;5, 24, 4&gt;</td>
</tr>
</tbody>
</table>
# Entering Math Notation in mathPad, calcPad, and physPad

The following tables list the notation you can enter to answer math questions that use either mathPad, calcPad, or physPad.

**See Also:**
- Answers That Cannot Be Understood on page 68
- Answering mathPad Questions on page 115
- Answering calcPad Questions on page 118
- Answering physPad Questions on page 122

## General Math

The following notation can be entered for mathPad, calcPad, and physPad questions unless otherwise indicated.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Group</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decimal number</td>
<td>0123456789</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fractions</td>
<td>/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addition</td>
<td>+</td>
<td>mathPad</td>
<td>[mathPad]</td>
<td>Button present in mathPad only. To enter the plus sign using your computer’s numeric keypad, press SHIFT+PLUS SIGN.</td>
</tr>
<tr>
<td>Subtraction</td>
<td>-</td>
<td>mathPad</td>
<td>[mathPad]</td>
<td>Button present in mathPad only.</td>
</tr>
<tr>
<td>Multiplication</td>
<td>*</td>
<td>mathPad</td>
<td>[mathPad]</td>
<td>Button present in mathPad only.</td>
</tr>
<tr>
<td>Division</td>
<td></td>
<td>mathPad</td>
<td>[mathPad]</td>
<td>Button present in mathPad only. Express as fractions in calcPad and physPad.</td>
</tr>
<tr>
<td>Parentheses</td>
<td>( )</td>
<td>mathPad: Sets</td>
<td>[mathPad]</td>
<td>Button present in mathPad only.</td>
</tr>
<tr>
<td>Equal</td>
<td>=</td>
<td>Relations</td>
<td></td>
<td>To enter the equal sign using the numeric keypad, press the PLUS SIGN key.</td>
</tr>
<tr>
<td>Greater than</td>
<td>&gt;</td>
<td>Relations</td>
<td>[mathPad]</td>
<td>You cannot enter the &gt; character from the keyboard when using Firefox on a Mac. Use the button instead.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Group</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater than or equal to</td>
<td>( \geq )</td>
<td>Relations</td>
<td></td>
<td>To enter the equal sign using the numeric keypad, press the PLUS SIGN key. You cannot enter the ( &gt; ) character from the keyboard when using Firefox on a Mac. Use the button instead.</td>
</tr>
<tr>
<td>Less than</td>
<td>( &lt; )</td>
<td>Relations</td>
<td></td>
<td>You cannot enter the ( &lt; ) character from the keyboard when using Firefox on a Mac. Use the button instead.</td>
</tr>
<tr>
<td>Less than or equal to</td>
<td>( \geq )</td>
<td>Relations</td>
<td></td>
<td>To enter the equal sign using the numeric keypad, press the PLUS SIGN key. You cannot enter the ( &lt; ) character from the keyboard when using Firefox on a Mac. Use the button instead.</td>
</tr>
<tr>
<td>Absolute value</td>
<td>(</td>
<td>n</td>
<td>)</td>
<td>mathPad, calcPad: <strong>Functions</strong> physPad: <strong>Math</strong></td>
</tr>
<tr>
<td>pi</td>
<td>( \pi )</td>
<td>mathPad: <strong>Symbols</strong> calcPad, physPad: <strong>Greek</strong></td>
<td>( \pi )</td>
<td></td>
</tr>
<tr>
<td>Infinity</td>
<td>( \infty )</td>
<td>mathPad: <strong>Symbols</strong> calcPad</td>
<td>( \infty )</td>
<td></td>
</tr>
<tr>
<td>Imaginary unit</td>
<td></td>
<td>mathPad, physPad: <strong>Symbols</strong> calcPad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factorial</td>
<td>( n! )</td>
<td>calcPad physPad: <strong>Math</strong></td>
<td></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Script l</td>
<td></td>
<td>physPad: <strong>Symbols</strong></td>
<td></td>
<td>Button present in physPad only.</td>
</tr>
<tr>
<td>Script E</td>
<td></td>
<td>physPad: <strong>Symbols</strong></td>
<td></td>
<td>Button present in physPad only.</td>
</tr>
</tbody>
</table>
Bases, Exponents, Roots, and Logarithms

The following notation can be entered for mathPad, calcPad, and physPad questions unless otherwise indicated.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Group</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exponent</td>
<td>^</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base or subscript</td>
<td>_</td>
<td>mathPad, calcPad: Functions physPad</td>
<td></td>
<td>You cannot enter the _ character from the keyboard when using Firefox on a Mac. Use the button instead.</td>
</tr>
<tr>
<td>Exponent and subscript of a variable</td>
<td>( n \cdot b ) ( \text{RIGHT ARROW} ) ( \wedge x )</td>
<td>mathPad, calcPad: Functions physPad</td>
<td></td>
<td>You cannot enter the _ character from the keyboard when using Firefox on a Mac. Use the button instead.</td>
</tr>
<tr>
<td>Square root</td>
<td>( \sqrt{n} )</td>
<td>mathPad, calcPad: Functions physPad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>nth root</td>
<td></td>
<td>mathPad, calcPad: Functions physPad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exponential function</td>
<td>( e^n )</td>
<td>mathPad, calcPad: Functions physPad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural logarithm</td>
<td>( \ln(n) )</td>
<td>mathPad, calcPad: Functions physPad</td>
<td></td>
<td>Function names are displayed in roman type.</td>
</tr>
<tr>
<td>Power of 10</td>
<td>( 10^n )</td>
<td>mathPad, calcPad: Functions physPad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logarithm (base 10)</td>
<td>( \log(n) )</td>
<td>mathPad, calcPad: Functions physPad</td>
<td></td>
<td>Function names are displayed in roman type.</td>
</tr>
</tbody>
</table>
### Algebraic Notation

The following notation can be entered for mathPad, calcPad, and physPad questions unless otherwise indicated.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Group</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No solution</td>
<td>NO SOLUTION</td>
<td>Relations</td>
<td></td>
<td>Button present in mathPad and calcPad only.</td>
</tr>
<tr>
<td>Undefined</td>
<td>UNDEFINED</td>
<td>mathPad: Symbols</td>
<td>UN</td>
<td>Button present in mathPad and calcPad only.</td>
</tr>
<tr>
<td>Does not exist</td>
<td>DNE</td>
<td></td>
<td></td>
<td>Button present in calcPad only.</td>
</tr>
<tr>
<td>Variables</td>
<td></td>
<td></td>
<td></td>
<td>Variable names are displayed in italics. Variables are case- sensitive. You cannot substitute x for X.</td>
</tr>
<tr>
<td>Lowercase Greek letter</td>
<td>Name of the letter in lowercase, for example, alpha, beta, gamma.</td>
<td>calcPad, physPad: Greek</td>
<td></td>
<td>Buttons present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Uppercase Greek letter</td>
<td>Capitalized name of the letter, for example, Alpha, Beta, Gamma.</td>
<td>calcPad, physPad: Greek</td>
<td></td>
<td>Buttons present in calcPad and physPad only.</td>
</tr>
<tr>
<td>theta</td>
<td>theta</td>
<td>mathPad: Symbols</td>
<td>(\theta)</td>
<td></td>
</tr>
</tbody>
</table>

**General Log**

\[ \log_b (n) \]

Button present in mathPad and calcPad: Functions

Function names are displayed in roman type.

You cannot enter the _ character from the keyboard when using Firefox on a Mac. Use the button instead.
Set and Interval Notation

The following notation can be entered for mathPad, calcPad, and physPad questions unless otherwise indicated.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Group</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set delimiters (braces)</td>
<td>{  }</td>
<td>mathPad:</td>
<td></td>
<td>Button present in mathPad only.</td>
</tr>
<tr>
<td>Closed interval (brackets)</td>
<td>[a,b]</td>
<td>mathPad:</td>
<td></td>
<td>Button present in mathPad only.</td>
</tr>
<tr>
<td>Open interval (parentheses)</td>
<td>(a,b)</td>
<td>mathPad:</td>
<td></td>
<td>Button present in mathPad only.</td>
</tr>
<tr>
<td>Half-closed interval (half-open interval)</td>
<td>[a,b)</td>
<td>[a,b]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empty set</td>
<td></td>
<td>mathPad:</td>
<td></td>
<td>Button present in mathPad and calcPad only.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Symbols</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Union</td>
<td>union</td>
<td>Sets</td>
<td></td>
<td>Button present in mathPad and calcPad only.</td>
</tr>
<tr>
<td>Intersection</td>
<td>intersect</td>
<td>Sets</td>
<td></td>
<td>Button present in mathPad and calcPad only.</td>
</tr>
</tbody>
</table>

Trigonometric Functions

The following notation can be entered for mathPad, calcPad, and physPad questions unless otherwise indicated.

**Note:**
- Express angles for trigonometric functions in radians.
- Use parentheses to specify the arguments of trigonometric functions, for example, sin(2x).
  - If you omit parentheses, spaces are used to determine the argument of the function and your answer might not be graded as you expect. For example:
    - sin3x (without a space) is graded as sin(3) × x
    - sin 3x (with a space) is graded as sin(3x)
- Function names are displayed in roman type.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Group</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees</td>
<td></td>
<td></td>
<td>mathPad: Symbols</td>
<td>Button present in mathPad and calcPad only.</td>
</tr>
<tr>
<td>Notation</td>
<td>Keyboard</td>
<td>Group</td>
<td>Button</td>
<td>Notes</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------</td>
<td>--------</td>
<td>--------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Sine</td>
<td>sin(n)</td>
<td>Trig</td>
<td><img src="#" alt="sin" /></td>
<td></td>
</tr>
<tr>
<td>Cosine</td>
<td>cos(n)</td>
<td>Trig</td>
<td><img src="#" alt="cos" /></td>
<td></td>
</tr>
<tr>
<td>Tangent</td>
<td>tan(n)</td>
<td>Trig</td>
<td><img src="#" alt="tan" /></td>
<td></td>
</tr>
<tr>
<td>Cosecant</td>
<td>csc(n)</td>
<td>Trig</td>
<td><img src="#" alt="csc" /></td>
<td></td>
</tr>
<tr>
<td>Secant</td>
<td>sec(n)</td>
<td>Trig</td>
<td><img src="#" alt="sec" /></td>
<td></td>
</tr>
<tr>
<td>Cotangent</td>
<td>cot(n)</td>
<td>Trig</td>
<td><img src="#" alt="cot" /></td>
<td></td>
</tr>
<tr>
<td>Inverse sine (arcsine)</td>
<td>sin⁻¹ RIGHT ARROW (n) arcsin(n)</td>
<td>Trig</td>
<td><img src="#" alt="sin" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Inverse cosine (arccosine)</td>
<td>cos⁻¹ RIGHT ARROW (n) arccos(n)</td>
<td>Trig</td>
<td><img src="#" alt="cos" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Inverse tangent (arctangent)</td>
<td>tan⁻¹ RIGHT ARROW (n) arctan(n)</td>
<td>Trig</td>
<td><img src="#" alt="tan" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Inverse cosecant (arcsecant)</td>
<td>csc⁻¹ RIGHT ARROW (n) arccsc(n)</td>
<td>Trig</td>
<td><img src="#" alt="csc" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Inverse secant (arcsecant)</td>
<td>sec⁻¹ RIGHT ARROW (n) arcsec(n)</td>
<td>Trig</td>
<td><img src="#" alt="sec" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Inverse cotangent (arccotangent)</td>
<td>cot⁻¹ RIGHT ARROW (n) arccot(n)</td>
<td>Trig</td>
<td><img src="#" alt="cot" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Hyperbolic sine</td>
<td>sinh(n)</td>
<td>calcPad, physPad: Trig</td>
<td><img src="#" alt="sinh" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Hyperbolic cosine</td>
<td>cosh(n)</td>
<td>calcPad, physPad: Trig</td>
<td><img src="#" alt="cosh" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Hyperbolic tangent</td>
<td>tanh(n)</td>
<td>calcPad, physPad: Trig</td>
<td><img src="#" alt="tanh" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Hyperbolic cosecant</td>
<td>csch(n)</td>
<td>calcPad, physPad: Trig</td>
<td><img src="#" alt="csch" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Hyperbolic secant</td>
<td>sech(n)</td>
<td>calcPad, physPad: Trig</td>
<td><img src="#" alt="sech" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td>Hyperbolic cotangent</td>
<td>coth(n)</td>
<td>calcPad, physPad: Trig</td>
<td><img src="#" alt="coth" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
</tbody>
</table>
### Notation

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Group</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inverse hyperbolic sine</strong> (area hyperbolic sine)</td>
<td><code>sinh^-1 RIGHT ARROW (n)</code> <code>arcsinh(n)</code></td>
<td>calcPad, physPad: Trig</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td><strong>Inverse hyperbolic cosine</strong> (area hyperbolic cosine)</td>
<td><code>cosh^-1 RIGHT ARROW (n)</code> <code>arccosh(n)</code></td>
<td>calcPad, physPad: Trig</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td><strong>Inverse hyperbolic tangent</strong> (area hyperbolic tangent)</td>
<td><code>tanh^-1 RIGHT ARROW (n)</code> <code>arctanh(n)</code></td>
<td>calcPad, physPad: Trig</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td><strong>Inverse hyperbolic cosecant</strong> (area hyperbolic cosecant)</td>
<td><code>csch^-1 RIGHT ARROW (n)</code> <code>arccsch(n)</code></td>
<td>calcPad, physPad: Trig</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td><strong>Inverse hyperbolic secant</strong> (area hyperbolic secant)</td>
<td><code>sech^-1 RIGHT ARROW (n)</code> <code>arcsech(n)</code></td>
<td>calcPad, physPad: Trig</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
<tr>
<td><strong>Inverse hyperbolic cotangent</strong> (area hyperbolic cotangent)</td>
<td><code>coth^-1 RIGHT ARROW (n)</code> <code>arccoth(n)</code></td>
<td>calcPad, physPad: Trig</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in calcPad and physPad only.</td>
</tr>
</tbody>
</table>

### Vector Notation

The following notation can be entered only for calcPad and physPad questions.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Keyboard</th>
<th>Group</th>
<th>Button</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bold vector</strong></td>
<td>Vectors</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in physPad only.</td>
<td></td>
</tr>
<tr>
<td><strong>Vector bracket</strong></td>
<td>Vectors</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in physPad only.</td>
<td></td>
</tr>
<tr>
<td><strong>i unit vector</strong></td>
<td>Vectors</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in physPad only.</td>
<td></td>
</tr>
<tr>
<td><strong>j unit vector</strong></td>
<td>Vectors</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in physPad only.</td>
<td></td>
</tr>
<tr>
<td><strong>k unit vector</strong></td>
<td>Vectors</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in physPad only.</td>
<td></td>
</tr>
<tr>
<td><strong>Arrow vector</strong></td>
<td>Vectors</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in physPad only.</td>
<td></td>
</tr>
<tr>
<td><strong>Unit vector (hat vector)</strong></td>
<td>Vectors</td>
<td><img src="image" alt="Button" /></td>
<td>Button present in physPad only.</td>
<td></td>
</tr>
</tbody>
</table>
Answering NumberLine Questions

The NumberLine tool lets you solve two types of number line questions: one in which you locate points or graph intervals and inequalities on a real number line graph, which is the default mode, and another where you indicate point positions on a number line graph, which is points mode.

**Note:** The NumberLine tool requires Flash 8 or higher. You can obtain the free Flash plug-in from [www.adobe.com/products/flashplayer/](http://www.adobe.com/products/flashplayer/).

Answering NumberLine Questions in Default Mode

The NumberLine tool in this mode includes a formatted display area in the middle and a row of buttons at the bottom. The first five buttons are tool buttons. The next six are graphing symbols.

To answer a number line question in this mode:

Use the NumberLine tool to graph the objects that represent your answer, or if there is no solution, and click the No Solution button.

A correct or incorrect icon is displayed in the lower right corner of the NumberLine tool after your answer has been graded.

<table>
<thead>
<tr>
<th>Task</th>
<th>Tool or graphing symbol</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graph a closed circle</td>
<td>●</td>
<td>1. Click the Select tool.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. From the graphing symbols palette, drag the closed circle symbol onto the appropriate location on the number line graph.</td>
</tr>
<tr>
<td>Graph an open circle</td>
<td>○</td>
<td>1. Click the Select tool.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. From the graphing symbols palette, drag the open circle symbol onto the appropriate location on the number line graph.</td>
</tr>
<tr>
<td>Task</td>
<td>Tool or graphing symbol</td>
<td>Steps</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Graph a left parenthesis**| (                      | 1. Click the Select tool.  
2. From the graphing symbols palette, drag the left parenthesis symbol onto the appropriate location on the number line graph. |
| **Graph a right parenthesis**| )                      | 1. Click the Select tool.  
2. From the graphing symbols palette, drag the right parenthesis symbol onto the appropriate location on the number line graph. |
| **Graph a left bracket**    | [                      | 1. Click the Select tool.  
2. From the graphing symbols palette, drag the left bracket symbol onto the appropriate location on the number line graph. |
| **Graph a right bracket**   | ]                      | 1. Click the Select tool.  
2. From the graphing symbols palette, drag the right bracket symbol onto the appropriate location on the number line graph. |
| **Draw a line between two objects** |                                       | 1. Click the Draw tool.  
2. Place your cursor anywhere between the two objects and click. |
| **Create a ray or fill the entire real number line** |                                            | 1. Click the Draw tool.  
2. Place your cursor anywhere between the endpoint and the infinity arrow or both infinity arrows and click. |
| **Indicate that no solution exists** | (NO SOL)                            | Click the No Solution button. |
| **Delete an object**        |                             | 1. Click the Erase tool.  
2. Click the object you want to delete.  
Note that any lines that are touching the object are also erased. |
### Answering Math and Science Questions

<table>
<thead>
<tr>
<th>Task</th>
<th>Tool or graphing symbol</th>
<th>Steps</th>
</tr>
</thead>
</table>
| Delete all objects          | 🗑️                      | 1. Click the Clear All tool. A message is displayed confirming you want to clear all placed objects.  
                              |                          | 2. Click OK.                                                           |
| Undo the last action        | 🔄                       | Click the Undo tool.                                                 |
| View help for the NumberLine tool | 🔄 Help | Click Help in the lower right corner of the NumberLine tool. |

**Note:** You cannot completely overlap a symbol with another symbol.

**Tip:** You can use the Select tool to place a symbol on the number line graph by clicking on the number line graph. When you do this, the symbol style drawer opens above the symbol. Use the symbol style drawer to change the type of symbol that is displayed.

See Also:
- [Submitting Answers](#) on page 64

### Answering NumberLine Questions in Points Mode

The NumberLine tool in points mode includes a set of points at the top, a formatted display area in the middle, and a row of tool buttons at the bottom.

Click and drag each point to its appropriate position. Some points might be unused.

To answer a number line question in this mode:

In the NumberLine tool, drag the points from above the number line graph to the correct location on the number line graph, or if there is no solution, click the No Solution button.

A correct or incorrect icon is displayed in the lower right corner of the NumberLine tool after your answer has been graded.
<table>
<thead>
<tr>
<th>Task</th>
<th>Tool or graphing symbol</th>
<th>Steps</th>
</tr>
</thead>
</table>
| Place a point on the number line graph    |                         | 1. Click the Select tool.  
2. From the holding area above the number line, drag the point to the appropriate location on the number line graph. |
| Indicate that no solution exists          |                         | Click the No Solution button.                                                                                                     |
| Delete an object                          |                         | 1. Click the Erase tool.  
2. Click the object you want to delete.                                                                                           |
| Delete one or all placed points           |                         | 1. Click the Clear All tool. A message is displayed confirming you want to clear the placed points.  
2. Click OK.                                                                                                                           |
| Undo the last action                      |                         | Click the Undo tool.                                                                                                               |
| View help for the NumberLine tool        |                         | Click Help in the lower right corner of the NumberLine tool.                                                                         |

**Note:** You cannot completely overlap two points.

**See Also:**
[Submitting Answers](#) on page 64

### Answering Graphing Questions

The WebAssign graphing tool lets you graph one or more mathematical elements directly on a set of coordinate axes. Your graph is scored automatically by WebAssign when you submit the assignment for grading.

The WebAssign graphing tool currently supports points, rays, segments, lines, circles, and parabolas. Inequalities can also be indicated by filling one or more areas.

**Note:** The WebAssign graphing tool requires Flash 8 or higher. You can obtain the free Flash plug-in from [www.adobe.com/products/flashplayer/](http://www.adobe.com/products/flashplayer/).

When you work on a graphing question, the WebAssign graphing tool displays below the question.
The middle of graphing tool is the drawing area. It contains labeled coordinate axes, which may have different axis scales and extents depending on the nature of the question you are working on. When you move your mouse over the drawing area, you’ll notice that the cursor location is shown inside the Graph toolbar on the right.

On the left side of graphing tool is the list of Tools that lets you create graph objects, select objects to edit, and create fills.

The bottom of the graphing tool holds the Object Properties toolbar, which becomes active when you have a graph element selected. This toolbar shows you all the details about the selected graph object, and also lets you edit properties of that object or delete it from your graph.

Depending on the question, the graphing tool might display both x and y axes, or only the x axis. If only the x axis is displayed, you can specify only x coordinates; the y coordinate will always be 0. The maximum and minimum allowed values on the graph in the graphing tool are also dependent on the question.

**To answer a graphing question:**

1. Use the WebAssign graphing tool to graph the objects that represent your answer.

<table>
<thead>
<tr>
<th>Task</th>
<th>Tool</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graph a point</td>
<td><img src="image" alt="Point tool" /></td>
<td>1. Click the Point tool.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Click a location in the graph.</td>
</tr>
<tr>
<td>Task</td>
<td>Tool</td>
<td>Steps</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------</td>
<td>----------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Graph a line                     | ![Line](image) | 1. Expand the line tools, and click the Line tool.  
2. Click the location of the first point on the line.  
3. Click the location of a second point on the line. |
| Graph a ray                      | ![Ray](image) | 1. Expand the line tools, and click the Ray tool.  
2. Click the location of the endpoint of the ray.  
3. Click the location of a second point on the ray. |
| Graph a line segment             | ![Line Segment](image) | 1. Expand the line tools, and click the Line Segment tool.  
2. Click the location of one endpoint of the line segment.  
3. Click the location of the second endpoint of the line segment. |
| Graph a circle                   | ![Circle](image) | 1. Click the Circle tool.  
2. Click the center of the circle.  
3. Click the location of a point on the circle. |
| Graph a parabola with horizontal symmetry | ![Parabola](image) | 1. Expand the parabola tools, and click the parabola tool with horizontal symmetry.  
2. Click the location of the vertex of the parabola.  
3. Click the location of another point on the parabola. |
| Graph a parabola with vertical symmetry | ![Parabola](image) | 1. Expand the parabola tools, and click the parabola tool with vertical symmetry.  
2. Click the location of the vertex of the parabola.  
3. Click the location of another point on the parabola. |
| Indicate that no solution exists | ![No Solution](image) | 1. Click the No Solution tool.  
2. If any objects are currently on the graph, a confirmation dialog displays. Click Yes to confirm that you want to clear the graph. |
| Select an object to change       | ![Selection](image) | 1. Click the Selection tool.  
2. Click the object in the graph that you want to change. |
<table>
<thead>
<tr>
<th>Task</th>
<th>Tool</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change an object’s coordinates</td>
<td></td>
<td>1. Select an object in the graph.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. In the Object Properties below the graph, enter values for the object’s center, vertex, or points.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Enter the coordinates precisely. You can type decimal values, or you can type fractional values using the forward slash character, as in 2/3.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. The graphing tool does not accept values that are outside of the displayed coordinate grid.</td>
</tr>
<tr>
<td>Move an object with the mouse</td>
<td></td>
<td>1. Select an object in the graph.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Click and drag the object to a new location.</td>
</tr>
<tr>
<td>Move an object with the keyboard</td>
<td></td>
<td>1. Select an object in the graph.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Press the cursor keys to move the object by single units up, down, left, or right.</td>
</tr>
<tr>
<td>Reshape an object with the mouse</td>
<td></td>
<td>1. Select an object in the graph.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Click and drag the center, vertex, or specified point to a new location.</td>
</tr>
<tr>
<td>Fill a region of the graph to specify inequality</td>
<td>![Fill Tool]</td>
<td>1. Graph one or more boundaries for the inequality.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Click the Fill tool.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Click a location in the region that should be filled.</td>
</tr>
<tr>
<td>Clear a filled region of the graph</td>
<td>![Fill Tool]</td>
<td>1. Click the Fill tool.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Click a location in the filled region that should be cleared.</td>
</tr>
<tr>
<td>Set an open endpoint for a ray or line segment</td>
<td>![Open Endpoint Tool]</td>
<td>1. Select a ray or line segment in the graph.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Click the Open Endpoint tool for the endpoint that should be open.</td>
</tr>
<tr>
<td>Set a closed endpoint for a ray or line segment</td>
<td>![Closed Endpoint Tool]</td>
<td>1. Select a ray or line segment in the graph.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Click the Closed Endpoint tool for the endpoint that should be closed.</td>
</tr>
<tr>
<td>Set a dashed line style to specify inequality</td>
<td>![Dash Tool]</td>
<td>1. Select an object in the graph.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Click the Dash tool to graph the object as a dashed line or curve.</td>
</tr>
<tr>
<td>Task</td>
<td>Tool</td>
<td>Steps</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Set a solid line style</td>
<td><img src="https://example.com/solid.png" alt="Solid" /></td>
<td>1. Select an object in the graph. &lt;br&gt;2. Click the Solid tool to graph the object as a solid line or curve.</td>
</tr>
<tr>
<td>Delete an object</td>
<td><img src="https://example.com/delete.png" alt="Delete" /></td>
<td>1. Select an object in the graph. &lt;br&gt;2. Click Delete or press Delete on the keyboard.</td>
</tr>
<tr>
<td>Delete all objects</td>
<td><img src="https://example.com/clear_all.png" alt="Clear All" /></td>
<td>1. Click Clear All. &lt;br&gt;2. If any objects are currently on the graph, a confirmation dialog is displayed. Click <strong>Yes</strong> to confirm that you want to clear the graph.</td>
</tr>
<tr>
<td>View help for the graphing tool</td>
<td><img src="https://example.com/help.png" alt="Help" /></td>
<td>1. Click <strong>Help</strong> in the lower left corner of the graphing tool.</td>
</tr>
</tbody>
</table>

**Tip:**
- When you are setting or moving a point on the graph, dashed coordinate lines and coordinate values are displayed to help you.
- You can specify coordinates for objects when you are creating them by typing values in the Object Properties section of the graphing tool.
- You can click the endpoint of an unselected ray or line segment to toggle it between closed and open.
- You can print a graph by using your browser's print function.

2. Click either **Submit New Answers to Question** or **Submit Whole Question**, depending on the submission options for the assignment. A correct or incorrect icon displays in the lower right corner of the graphing tool.

**See Also:**
- Submitting Answers on page 64
- Tutorial: Graphing on Number Lines at [www.webassign.net/watutorials/graphpad/tutorial-1.swf](http://www.webassign.net/watutorials/graphpad/tutorial-1.swf)
- Tutorial: Graphing Parabolas at [www.webassign.net/videos/GraphPad%20Parabolas.swf](http://www.webassign.net/videos/GraphPad%20Parabolas.swf)
- Tutorial: Graphing Circles at [www.webassign.net/videos/GraphPad%20Circles.swf](http://www.webassign.net/videos/GraphPad%20Circles.swf)
- Tutorial: Graphing Lines at [www.webassign.net/videos/GraphPad%20Lines.swf](http://www.webassign.net/videos/GraphPad%20Lines.swf)
- Tutorial: Graphing Inequalities at [www.webassign.net/videos/GraphPad%202D%20Inequalities.swf](http://www.webassign.net/videos/GraphPad%202D%20Inequalities.swf)
- Tutorial: Graphing Systems of Equations at [www.webassign.net/videos/GraphPad%20Systems.swf](http://www.webassign.net/videos/GraphPad%20Systems.swf)
Answering chemPad Questions

Use WebAssign's chemPad to enter responses that are automatically displayed in correct chemical notation.

The chemPad tool includes a row of buttons at the top, a formatted display area in the middle, and a text entry box at the bottom.

To answer a chemPad question:

Type your answer or click buttons to formulate your response in the text entry box. chemPad automatically updates the display area to show the formatted chemical notation.

The formatted chemical notation in the display area helps you to know that what you are typing represents the chemical formula or equation you intend to submit for your response.

Use the chemPad buttons as a way to enter some kinds of notation.

You can pause the pointer over any button to see its description.

<table>
<thead>
<tr>
<th>To enter this</th>
<th>Click this</th>
<th>Type this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subscript</td>
<td>[X_]</td>
<td>_ (underscore)</td>
</tr>
<tr>
<td>Superscript</td>
<td>[X^2]</td>
<td>^ (caret)</td>
</tr>
<tr>
<td>Forward Reaction Arrow</td>
<td>[→]</td>
<td>---&gt;</td>
</tr>
<tr>
<td>Equilibrium Reaction</td>
<td>[=]</td>
<td>&lt;=&gt;</td>
</tr>
<tr>
<td>Reverse Reaction Arrow</td>
<td>[&lt;]</td>
<td>&lt;--&gt;</td>
</tr>
<tr>
<td>Lowercase Greek letters such as α, β, δ</td>
<td>[Greek]</td>
<td>The lowercase name of the letter, such as alpha, beta, delta</td>
</tr>
<tr>
<td>Uppercase Greek letters such as Δ, Σ, Ω</td>
<td>[Greek]</td>
<td>The capitalized name of the letter, such as Delta, Sigma, Omega</td>
</tr>
<tr>
<td>Stacked Fraction</td>
<td>/</td>
<td></td>
</tr>
<tr>
<td>Dot (·)</td>
<td></td>
<td>. (period) or *</td>
</tr>
</tbody>
</table>
Note:

- chemPad is designed to minimize your need to add formatting to your answer. For most questions, you do not need to indicate to chemPad where to end a subscript or superscript, or to specifically delimit special symbols like arrows.
- Type spaces where they belong in your notation, such as between quantum levels in an electron configuration and between chemical formulas and arrows or plus signs in reaction equations.
- Typing an alphabetic character or a space ends a subscript or superscript. For example, type H_20 to display H_2O, or Na^+ + Cl^- to display Na^+ + Cl^-.
- To type advanced notation such as general formulas and equilibrium equations, enclose the content of a superscript or subscript in braces {}. For example, type \( K_c = [CO_2] \) to display \( K_c = [CO_2] \).
- The same rules are used to display the formatted notation and to score your response, so ensure that your formatted notation represents the answer you want to submit.

See Also:
Submitting Answers on page 64

Examples: Using chemPad to Enter Common Notation
The following examples illustrate entry of some common notation.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Scenario</th>
<th>Type this</th>
<th>To display this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecules</td>
<td>Using subscripts to format molecular ratios in chemical formulas</td>
<td>H_20</td>
<td>H_2O</td>
</tr>
<tr>
<td>Simple Ions</td>
<td>Entering charges</td>
<td>Ca^2+</td>
<td>Ca^{2+}</td>
</tr>
<tr>
<td>Molecular or Compound Ions</td>
<td>Entering charges and molecular ratios</td>
<td>SO_4^2-</td>
<td>SO_4^{2-}</td>
</tr>
<tr>
<td>Complex Ions</td>
<td>Grouping with subscripts and superscripts</td>
<td>[Co(SCN)_2(H_2O)_4]^+</td>
<td>[Co(SCN)_2(H_2O)_4]^+</td>
</tr>
<tr>
<td>Isotope</td>
<td>Entering an isotopic mass number in the so-called M/A or M/Z format</td>
<td>^233_91Pa</td>
<td>^233_91Pa</td>
</tr>
<tr>
<td>Chemical Reactions</td>
<td>Entering a combination of correctly formatted chemical formulas and symbols</td>
<td>2 H_20_2 --&gt; 2 H_2O + O_2</td>
<td>2 H_2O_2 \rightarrow 2 H_2O + O_2</td>
</tr>
<tr>
<td>Subject</td>
<td>Scenario</td>
<td>Type this</td>
<td>To display this</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Chemical Reactions with States of Matter</td>
<td>Entering a combination of correctly formatted chemical formulas with their respective states of matter and symbols</td>
<td>( \text{CH}_4(\text{g}) + 4 \text{S}(\text{s}) \rightarrow \text{CS}_2(\text{l}) + 2 \text{H}_2\text{S}(\text{g}) )</td>
<td>( \text{CH}_4(\text{g}) + 4 \text{S}(\text{s}) \rightarrow \text{CS}_2(\text{l}) + 2 \text{H}_2\text{S}(\text{g}) )</td>
</tr>
<tr>
<td>Electron Configuration</td>
<td>Using complete notation</td>
<td>( 1s^2 2s^2 2p^5 )</td>
<td>( 1s^2 2s^2 2p^5 )</td>
</tr>
<tr>
<td>Electron Configuration</td>
<td>Using noble gas notation</td>
<td>( [\text{He}] 2s^2 2p^5 )</td>
<td>( [\text{He}] 2s^2 2p^5 )</td>
</tr>
<tr>
<td>Equilibrium Expressions</td>
<td>Including a stacked fraction and multiplication dots</td>
<td>( K_c = \frac{[\text{COCl}][\text{Cl}]}{[\text{CO}][\text{Cl}_2]} )</td>
<td>( K_c = \frac{[\text{COCl}][\text{Cl}]}{[\text{CO}][\text{Cl}_2]} )</td>
</tr>
<tr>
<td>Electrochemical Cell Notation</td>
<td>Enter cell line notation</td>
<td>( \text{Mg(s)}</td>
<td>\text{Mg}^{2+} (\text{aq})</td>
</tr>
</tbody>
</table>

### Answering MarvinSketch Questions

Some questions require you to use MarvinSketch to draw chemical structures that are automatically scored in WebAssign.

**Note:** Java is required to answer MarvinSketch questions. See System Requirements on page xiii.

In your assignments, MarvinSketch questions display a labeled frame. If the question defines an initial drawing, or if you have created a drawing to answer the question, it is displayed in the frame. Otherwise, the frame lists basic instructions for getting started.

![MarvinSketch](image)

1. Click **Open MarvinSketch**, or click anywhere in the MarvinSketch frame.
Important: Displaying MarvinSketch might take a minute or so. You might see a Java logo while MarvinSketch is being loaded. Do not close this window before MarvinSketch has displayed or your browser might shut down unexpectedly, causing you to lose any unsaved work.

When you open MarvinSketch to answer a question, the MarvinSketch editor opens in a new window.

2. Use the toolbars to draw a chemical structure.
   - To cancel any work you have done in the current MarvinSketch window, click Cancel. The window closes and your answer in the assignment is not changed.
   - If the question started with an initial drawing, click Revert to Original to cancel all of your work for the question and revert to the initial drawing.

3. When you are finished, click Finished. The window closes and your answer is displayed in the assignment.
### Drawing Chemical Structures in MarvinSketch

The following table describes how to draw and edit chemical structures and reactions in MarvinSketch.

<table>
<thead>
<tr>
<th>Task</th>
<th>Steps</th>
</tr>
</thead>
</table>
| Add an atom of one of the following elements: H, C, N, O, P, S, F, Cl, Br, I | 1. Click the element symbol.  
2. Click in the drawing area. |
| Add any atom                                   | 1. Click ![atom](image)  
2. Click the element symbol in the periodic table.  
3. Close or move the Periodic System window.  
4. Click in the drawing area. |
| Add a special atom type or node, such as Q, M, X, and LP | 1. Click ![atom](image)  
2. Click the **Advanced** tab.  
3. Click the symbol on the Advanced page.  
4. Close or move the Periodic System window.  
5. Click in the drawing area. |
| Add an atom and its bond to an existing atom   | 1. Click the element symbol for the new atom.  
2. Drag from the existing atom until the symbol for the new atom is displayed under the pointer. |
| Add two bonded carbon atoms                    | 1. Click the bond tool ![bond](image)  
2. Click in the drawing area. |
| Add a chain of carbon atoms                    | 1. Click ![carbon](image)  
2. Drag in the drawing area until the number of carbon atoms you want to insert is displayed under the pointer. |
<table>
<thead>
<tr>
<th>Task</th>
<th>Steps</th>
</tr>
</thead>
</table>
| Replace an atom                          | 1. Click the element symbol for the new atom.  
                                          | 2. Click the atom to be replaced.                                           |
| Add a single bond between existing atoms | 1. Click the bond tool.  
                                          | 2. Drag from one atom to another.                                           |
| Add a double bond between existing atoms | 1. Click the arrow on the right side of the bond tool and select Double.  
                                          | 2. Drag from one atom to another.                                           |
| Change a bond type                        | 1. Click the arrow on the right side of the bond tool and select the new bond type.  
                                          | 2. Click the bond to be changed.                                             |
| Draw a reaction arrow                     | 1. Click the reaction arrow tool.  
                                          | 2. Drag the pointer in the drawing area in the direction the arrow should point. |
| Add agent names to a reaction arrow       | 1. Click the Advanced tab.  
                                          | 2. Click Pseudo on the Advanced page.  
                                          | 3. Type the agents in Value (subscripts are automatically formatted for values like H2O).  
                                          | 4. Close or move the Periodic System window.  
                                          | 5. Click above the reaction arrow.                                          |
| Draw a graphical arrow                    | 1. Click the graphical arrow tool.  
                                          | 2. Drag the pointer in the drawing area in the direction the arrow should point. |
| Add a single electron (monovalent radical) to an atom | 1. Click the radical tool.  
                                          | 2. Click an atom.                                                          |
| Add lone pairs to an atom                 | 1. Click the arrow on the right side of the lone pairs tool and select the number of lone pairs to add.  
<pre><code>                                      | 2. Click an atom.                                                          |
</code></pre>
<table>
<thead>
<tr>
<th>Task</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draw a curved harpoon to show the movement of a single electron</td>
<td>1. Click the arrow on the right side of the electron flow tool and select <strong>1 Electron</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. Click the source atom for the electron.</td>
</tr>
<tr>
<td></td>
<td>3. Click the target atom for the electron, or to create a bond, click the midpoint between atoms.</td>
</tr>
<tr>
<td>Draw a curved arrow to show the movement of two electrons</td>
<td>1. Click the arrow on the right side of the electron flow tool and select <strong>2 Electrons</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. Click the source atom for the electrons.</td>
</tr>
<tr>
<td></td>
<td>3. Click the target atom for the electrons, or to create a bond, click the midpoint between atoms.</td>
</tr>
<tr>
<td>Set the charge for an atom</td>
<td>1. Right-click the atom.</td>
</tr>
<tr>
<td></td>
<td>2. Select <strong>Charge &gt; value</strong>, where <em>value</em> is the charge you want to use.</td>
</tr>
<tr>
<td>Decrease an atom's charge</td>
<td>1. Click 🕙.</td>
</tr>
<tr>
<td></td>
<td>2. Click an atom.</td>
</tr>
<tr>
<td>Increase an atom's charge</td>
<td>1. Click 🕙.</td>
</tr>
<tr>
<td></td>
<td>2. Click an atom.</td>
</tr>
<tr>
<td>Select a single item</td>
<td>1. Click the arrow on the right side of the selection tool and select <strong>Rectangle Selection</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. Click the item you want to select.</td>
</tr>
<tr>
<td>Select an entire structure</td>
<td>1. Click the arrow on the right side of the selection tool and select <strong>Structure Selection</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. Click any part of a structure.</td>
</tr>
<tr>
<td>Select items in a rectangular region</td>
<td>1. Click the arrow on the right side of the selection tool and select <strong>Rectangle Selection</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. Drag the pointer diagonally across the drawing area to select items.</td>
</tr>
<tr>
<td>Select items in an arbitrary region</td>
<td>1. Click the arrow on the right side of the selection tool and select <strong>Lasso Selection</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. Drag the pointer to draw a boundary around the items you want to select.</td>
</tr>
<tr>
<td>Task</td>
<td>Steps</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Select multiple items</td>
<td>1. Click the arrow on the right side of the selection tool and select <strong>Rectangle Selection</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. Click the first item you want to select.</td>
</tr>
<tr>
<td></td>
<td>3. Hold the SHIFT key and click any additional items you want to select.</td>
</tr>
<tr>
<td>Copy selected items to the clipboard</td>
<td>Click <img src="image" alt="copy" /> or press CTRL+C.</td>
</tr>
<tr>
<td>Paste items from the clipboard</td>
<td>1. Click <img src="image" alt="paste" /> or press CTRL+V.</td>
</tr>
<tr>
<td></td>
<td>2. Click in the drawing area where you want to paste the clipboard items.</td>
</tr>
<tr>
<td>Delete selected items</td>
<td>Click <img src="image" alt="delete" /> or press DELETE.</td>
</tr>
<tr>
<td>Delete items by clicking</td>
<td>1. Click <img src="image" alt="delete" /></td>
</tr>
<tr>
<td></td>
<td>2. Click the items you want to delete.</td>
</tr>
<tr>
<td>Move an atom</td>
<td>1. Drag the atom to a new location.</td>
</tr>
<tr>
<td>Move selected items</td>
<td>1. Move the pointer toward the center of the selection until a square is displayed.</td>
</tr>
<tr>
<td></td>
<td>2. Drag the selection to a new location.</td>
</tr>
<tr>
<td>Undo your last change</td>
<td>Click <img src="image" alt="undo" /> or press CTRL+Z.</td>
</tr>
<tr>
<td>Set a mapping number for an atom</td>
<td>1. Right-click the atom you want to change.</td>
</tr>
<tr>
<td></td>
<td>2. Select <strong>Map &gt; M#</strong> where # is the mapping number to set.</td>
</tr>
<tr>
<td>Transform selected structure or entire drawing to</td>
<td>Click <img src="image" alt="aromatic" /></td>
</tr>
<tr>
<td>aromatic representation</td>
<td></td>
</tr>
<tr>
<td>Transform selected structure or entire drawing to</td>
<td>Click <img src="image" alt="non-aromatic" /></td>
</tr>
<tr>
<td>non-aromatic representation</td>
<td></td>
</tr>
<tr>
<td>Rotate a structure to align a bond horizontally</td>
<td>1. Right-click a bond in the structure.</td>
</tr>
<tr>
<td></td>
<td>2. Select <strong>Align &gt; Horizontally</strong>.</td>
</tr>
<tr>
<td>Rotate a structure to align a bond vertically</td>
<td>1. Right-click a bond in the structure.</td>
</tr>
<tr>
<td></td>
<td>2. Select <strong>Align &gt; Vertically</strong>.</td>
</tr>
</tbody>
</table>

January 2012
<table>
<thead>
<tr>
<th>Task</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotate selected items in</td>
<td>1. Move the pointer toward the center of the selection until a rotation cue is displayed.</td>
</tr>
<tr>
<td>2 dimensions</td>
<td>2. Drag the selection to rotate it around its center.</td>
</tr>
<tr>
<td>Rotate the drawing in 3</td>
<td>1. Click <img src="image1.png" alt="image" /></td>
</tr>
<tr>
<td>dimensions</td>
<td>2. Drag the pointer to rotate the drawing.</td>
</tr>
<tr>
<td>Rotate selected structure in</td>
<td>1. Move the pointer toward the center of the selection until a square is displayed.</td>
</tr>
<tr>
<td>3 dimensions</td>
<td>2. Right-click in the square and select <strong>Transform &gt; Rotate in 3D</strong>.</td>
</tr>
<tr>
<td></td>
<td>3. Drag the pointer to rotate the structure.</td>
</tr>
<tr>
<td>Clean drawing in 2 dimensions</td>
<td>Click <img src="image2.png" alt="image" /> Standardizes bond lengths and angles to improve appearance. The drawing is converted to a 2-dimensional drawing if needed.</td>
</tr>
<tr>
<td>Clean drawing in 3 dimensions</td>
<td>Click <img src="image3.png" alt="image" /> Standardizes bond lengths and angles to improve appearance. The drawing is converted to a 3-dimensional drawing if needed.</td>
</tr>
<tr>
<td>Zoom in</td>
<td>1. Click <img src="image4.png" alt="image" /></td>
</tr>
<tr>
<td>Zoom out</td>
<td>1. Click <img src="image5.png" alt="image" /></td>
</tr>
<tr>
<td>Zoom to a specific</td>
<td>1. Select a zoom level from the zoom level list <img src="image6.png" alt="image" /> or type a new zoom level in the box.</td>
</tr>
<tr>
<td>magnification</td>
<td><img src="image7.png" alt="image" /></td>
</tr>
</tbody>
</table>

**Answering JME Questions**

Some questions require you to use the Java Molecular Editor (JME) to draw chemical structures.

**Note:** Java is required to answer JME questions. See System Requirements on page xiii.
To answer a JME question:

1. Click Open JME Editor.
   The JME Editor opens in a new window.

2. Use the toolbars to draw a chemical structure.

3. When you are done, click Save Drawing.
   The JME Editor closes and your drawing is entered in the answer box as a SMILES string.

4. Click Submit.

See Also:
Submitting Answers on page 64
# Drawing Chemical Structures in JME Molecular Editor

The following table describes how to draw and edit chemical structures in the JME Molecular Editor.

**Note:** Whenever you add an atom in JME, the implied hydrogen atoms are listed based on the valence. For example, adding N displays NH$_3$. The hydrogen atoms are implied, but are not explicitly drawn. This is the way most questions expect you to draw structures.

If a question specifically asks you to show hydrogen atoms, then add the hydrogen atoms explicitly.

<table>
<thead>
<tr>
<th>Task</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Add a new structure to the drawing</strong></td>
<td>By default, the JME tools add or change items in existing structures. To create a new structure in the drawing:</td>
</tr>
<tr>
<td></td>
<td>1. Click <strong>NEW</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. Add an atom, bond, ring, or carbon chain anywhere in the drawing area.</td>
</tr>
<tr>
<td><strong>Add an atom of one of the following elements — C, N, O, S, F, Cl, Br, I, P — as a new structure</strong></td>
<td>1. Click <strong>NEW</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. Click the element's symbol.</td>
</tr>
<tr>
<td></td>
<td>3. Click in the drawing area.</td>
</tr>
<tr>
<td><strong>Add any atom as a new structure</strong></td>
<td>1. Click <strong>NEW</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. Click <strong>X</strong>.</td>
</tr>
<tr>
<td></td>
<td>3. In the popup window that is displayed, type the symbol of the atom you want to add.</td>
</tr>
<tr>
<td></td>
<td>4. Click in the drawing area.</td>
</tr>
<tr>
<td><strong>Add an atom and its bond to an existing structure</strong></td>
<td>1. Click a single bond —, double bond ——, or triple bond ———.</td>
</tr>
<tr>
<td></td>
<td>2. Click the atom in the structure where the bond should be added.</td>
</tr>
<tr>
<td></td>
<td>3. Click the symbol of the atom that you want to add to the end of the bond, or click <strong>X</strong> and type the symbol of the atom you want to add.</td>
</tr>
<tr>
<td></td>
<td>4. Click the end of the bond where the atom should be added.</td>
</tr>
</tbody>
</table>

**Note:** When you add a bond to a structure in this way, a Carbon atom is always added to the end of the bond. When you "add" a different atom to the end of the bond, you are really replacing the Carbon.
<table>
<thead>
<tr>
<th>Task</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add a bond between existing atoms</td>
<td>1. Click a single bond [=], double bond [==], or triple bond [===]. 2. Drag from one atom to another.</td>
</tr>
<tr>
<td>Change a bond type</td>
<td>1. Click a single bond [=], double bond [==], or triple bond [===]. 2. Click the bond to be changed.</td>
</tr>
<tr>
<td>Replace an atom</td>
<td>1. Click the symbol of the new atom that you want to use, or click [x] and type the symbol of the atom you want to use. 2. Click the atom to be replaced.</td>
</tr>
<tr>
<td>Set the charge for an atom</td>
<td>1. Click [+]. 2. Click the atom to be changed. If needed, click the atom multiple times to see the possible charges suggested by the JME Editor.</td>
</tr>
<tr>
<td>Note: To set a different charge than those suggested, use the [x] tool and type a SMILES string without brackets, for example, Si, Fe++, or NH3+.</td>
<td></td>
</tr>
<tr>
<td>Add a chain of carbon atoms</td>
<td>1. Click [] . 2. Starting from the atom to which the carbon chain attaches, drag in the drawing area until the number of carbon atoms you want to insert is displayed.</td>
</tr>
<tr>
<td>Add a carbon ring</td>
<td>1. Click the button that displays the kind of ring you want to add. 2. Click the atom to which the ring should be attached.</td>
</tr>
<tr>
<td>Add wedge bonds</td>
<td>1. Click [] . 2. Click the atom in the structure where the bond should be added. 3. If needed, click the wedge bond in the structure to change its type.</td>
</tr>
<tr>
<td>Delete a bond or atom</td>
<td>1. Click [x] . 2. Click the item you want to delete.</td>
</tr>
<tr>
<td>Delete a structure</td>
<td>1. Move the pointer over the structure to be deleted until a portion of the structure displays a blue selection outline. 2. Click [] . The structure is deleted.</td>
</tr>
<tr>
<td>Task</td>
<td>Steps</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Delete a functional group</td>
<td>1. Click <code>X</code>.&lt;br&gt;2. Click the bond connecting the group with the main skeleton.</td>
</tr>
<tr>
<td>Move a structure</td>
<td>1. Move the pointer over the structure to be moved until a portion of the structure displays a blue selection outline.&lt;br&gt;2. Move the pointer over an empty part of the drawing area.&lt;br&gt;3. Drag the pointer to move the structure.</td>
</tr>
<tr>
<td>Rotate a structure</td>
<td>1. Move the pointer over the structure to be moved until a portion of the structure displays a blue selection outline.&lt;br&gt;2. Move the pointer over an empty part of the drawing area.&lt;br&gt;3. Hold down the <code>SHIFT</code> key and drag the pointer to rotate the structure.</td>
</tr>
<tr>
<td>Undo your last change</td>
<td>Click <code>U</code>. You can undo only one change.</td>
</tr>
<tr>
<td>View the SMILES string for your drawing</td>
<td>Click <code>O</code>. The SMILES string is displayed in a popup window.</td>
</tr>
</tbody>
</table>
Scores and Grades

This chapter contains the following topics:

- Viewing Scores and Grades
- Viewing Assignment Scoring Details

You can view your scores and grades for previous assignments, as well as the scores you have for assignments you are currently working on.

See Also:
Viewing Your Previous Answers for a Question on page 87
Viewing Question Feedback on page 66
Viewing Scores and Grades

On your My Assignments page, you see all of your scores for your assignments within WebAssign. You might also see scores for assignments that you took outside of WebAssign.

**Note:** You cannot view scores or grades for a course in WebAssign after the last available date set by your instructor. Often, this date is shortly after the last day of classes.

In addition, your instructor can turn off display of scores and grades in WebAssign or choose to display only certain information.

On the Grades page, you see all of your raw scores and grades that your instructor posts.

The page might also include the class average, minimum and maximum scores, the standard deviation, and a histogram of scores for each category of assignment and for individual assignments. It might have your average for each category of assignments as well as the scores for individual assignments. Your instructor will let you know which scores and grades will be posted for your course.

**To see your scores and grades:**

1. From the menu bar, click Grades.

2. If your instructor enabled all of the options, your Grades page might look like this:

   ![Grades page example]

   The Overall Grade gives information about your grade in the class as calculated from the various categories of assignments, such as Homework, Test, In Class, Quiz, Lab, and Exam. Your instructor might have different categories. You can click the Histogram icon next to the Overall Grade to view a histogram of the grades in the class.

   The Category Grades show the contribution to your overall grade from each of the categories. Class Statistics shows you how the rest of the class is doing.

   3. To see how a number was calculated, click a grade that is a link.

   4. To see a summary of all of your raw scores and the class statistics for each assignment, if your instructor has posted these, click My Scores Summary.
See Also:
Viewing Assignment Scoring Details on page 157

Viewing Assignment Scoring Details

After you submit answers for an assignment, you can see your earned and total points for the assignment, for each question, and for each question part.

Note: Your instructor might choose not to display these scores.

To view scoring details for an assignment:

1. If the assignment for which you want to see scoring details is not already open, then open it.

2. To see how your assignment is scored, read the Assignment Scoring rule at the top of the assignment.

   There are four ways your assignment can be scored:
   - Your last submission is used for your score
   - Your best submission for each question part is used for your score
   - Your best submission for each entire question is used for your score
   - Your best assignment submission is used for your score

3. View the assignment score, a question score, or a question part score in the assignment.
   - The assignment score is displayed at the top of the assignment.
• The question score is displayed at the top of each question.
• To see question part scores, click the plus sign by the question score.

See Also:
Viewing Scores and Grades on page 156
Opening Assignments on page 43
Viewing Submission Rules and Allowed Submissions on page 61

Assignment Score

The Current Score at the top of the assignment displays the number of points you have earned followed by the number of points possible for the assignment.

Note: Your instructor might choose not to display the assignment score in the assignment.

In this example, a student has earned 10 out of 22 possible points for the assignment.

Your assignment score is also displayed with the percentage of correct answers in the Total column after all of the question scores.

Question Score

The points table at the top of the assignment displays the number of points earned followed by the number of points possible for each question on the assignment.

Note: Your instructor might choose not to display question scores in the assignment.

In this example, a student has earned 0 out of 2 possible points for question 1, 2 out of 2 possible points for question 2, 1 out of 2 possible points for question 3, and so on.

When you cannot earn any more points, the background of the question score is shaded and an icon is displayed. If no icon is displayed, you can still earn more points for the question.
<table>
<thead>
<tr>
<th>Display</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1/1</td>
<td>The question has not been submitted. You can submit an answer.</td>
</tr>
<tr>
<td>0/2</td>
<td>The question was submitted, but no points were earned. You can submit a different answer.</td>
</tr>
<tr>
<td>1/2</td>
<td>The question was submitted and some points were earned. You can submit a different answer.</td>
</tr>
<tr>
<td>2/2 ✔</td>
<td>The question was submitted and all points were earned. You do not need to submit a different answer.</td>
</tr>
<tr>
<td>1/2 ✗</td>
<td>The question was submitted and some points were earned. You cannot submit it again; either the due date has passed or you have used all of your submissions.</td>
</tr>
<tr>
<td>0/2 ✗</td>
<td>The question was submitted, but no points were earned. You cannot submit it again; either the due date has passed or you have used all of your submissions.</td>
</tr>
<tr>
<td>-3/3</td>
<td>The question has not been submitted. You cannot submit an answer because the due date has passed.</td>
</tr>
<tr>
<td>1/0</td>
<td>The question was submitted and some points were earned. The earned points count as extra credit toward your assignment score. You cannot submit it again; either the due date has passed or you have used all of your submissions.</td>
</tr>
</tbody>
</table>

**Note:** Some icons have different meanings when they are shown as marks beside your answer.

You can click the question number above the score to navigate to the question. Each question’s score is also displayed at the top of the question.

**See Also:**
Marks on page 66
Question Part Score

To see scores for each question part, click the plus sign in the question heading. The points table at the top of the question displays the number of points earned followed by the number of points possible for each question part.

**Note:**

A **question part** is the smallest unit of a question for which you can provide an answer. Some questions have only one question part. Some questions have dozens of question parts.

Your instructor might choose not to display question part scores in the assignment.

<table>
<thead>
<tr>
<th>Display</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Image]</td>
<td>The question part has not been submitted. You can submit an answer.</td>
</tr>
<tr>
<td>![Image]</td>
<td>The question part was submitted, but no points were earned. You can submit a different answer.</td>
</tr>
</tbody>
</table>

Determine whether \(-1\) is a solution of the equation.

\[
\begin{align*}
2\sqrt{2x + 4} &= \sqrt{9x + 13} \\
2\sqrt{3(1-\square)} &= 4 + 2 \cdot \sqrt{9(2-\square)} + \sqrt{13} \\
2\sqrt{3 \cdot 4} &\neq 4 + 2 \cdot \sqrt{9 + \sqrt{13}} \\
2\sqrt{1} &\neq \sqrt{5} \quad \text{(No Response)} \\
2 = 2
\end{align*}
\]

Thus, \(\text{(No Response)}\) is the solution.

When you expand the question heading, each question part displays a numbered label corresponding to a question part number in the table.

In this example, a student has earned 1 out of 1 point for question part 1, 1 out of 1 point for question part 2, .1 out of 1 point for question part 3, and so on.

When you cannot earn any more points, the background of the question part score is shaded and an icon is displayed. If no icon is displayed, you can still earn more points for the question part.
<table>
<thead>
<tr>
<th>Display</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>The question part was submitted and some points were earned, for example, if partial credit was awarded for specifying compatible units. You can submit a different answer.</td>
</tr>
<tr>
<td>2/2 ✔</td>
<td>The question part was submitted and all points were earned. You do not need to submit a different answer.</td>
</tr>
<tr>
<td>1/2 ☓</td>
<td>The question part was submitted and some points were earned, for example, if partial credit was awarded for specifying compatible units. You cannot submit it again; either the due date has passed or you have used all of your submissions.</td>
</tr>
<tr>
<td>0/2 ☓</td>
<td>The question part was submitted, but no points were earned. You cannot submit it again; either the due date has passed or you have used all of your submissions.</td>
</tr>
<tr>
<td>-/-</td>
<td>The question part has not been submitted. You cannot submit an answer because the due date has passed.</td>
</tr>
<tr>
<td>1/0</td>
<td>The question part was submitted and some points were earned. The earned points count as extra credit toward your question score. You cannot submit it again; either the due date has passed or you have used all of your submissions.</td>
</tr>
</tbody>
</table>

**Note:** Some icons have different meanings when they are shown as marks beside your answer.

**See Also:**
Marks on page 66

**Partial Credit and Extra Credit**

You might sometimes receive partial credit or extra credit for an answer. Some common reasons include:

- Specifying an incorrect numerical answer with a dimensionally correct unit
- Specifying a numerically correct answer with the wrong number of significant figures or decimal places
- Bonus or penalty points set by your instructor for the question, for example, partial credit for attempting a difficult question, or bonus points for answering early
Manually Graded Questions

Some kinds of questions are graded by your instructor or a teaching assistant. These include pencilPad questions, short-answer questions, essay questions, file-upload questions, and questions for which you must show your work.

For these questions, you will usually receive all the possible points when you first submit your answer, but your instructor or a teaching assistant will grade your answers and determine the actual score after the assignment due date. Your instructor might also provide feedback that you can see below your answer.
Instructor Assistance

This chapter contains the following topics:

- Sending Your Teacher a Private Message
- Asking Your Teacher a Question About an Assignment
- Asking Your Teacher to Extend the Due Date for an Assignment

In addition to the usual help provided by your school, such as tutoring by teaching assistants and consultation with your instructor, you can also communicate with your instructor through WebAssign.

If your instructor enabled these features, you can:

- Send a private message to your instructor
- Send an Ask Your Teacher message about a specific assignment
- Request more time to complete an assignment
Sending Your Teacher a Private Message

A private message is a message that you can send to your instructor. The message might also be delivered to someone the instructor designated to read and respond to them, such as a Teaching Assistant.

You can send these messages from your Communication page in WebAssign. The instructor knows that the message came from you, and he or she knows which class the message is about.

This feature is displayed as a "New Message For" link in the Private Messages section of your Communication page.

If the link is not displayed and you want to have the option to send your instructor messages from this location, ask your instructor to enable private messages in WebAssign.

To send a private message:

1. Select a class from the My Classes drop-down menu.
2. From the menu bar, click Communication.
3. Under Private Messages, click New Message for name where name is the name of your instructor.
4. Enter a subject and your message, and click Send.

You are returned to your Communication page, and the message is added to your Sent total. You can click the Sent link to view message details.

Asking Your Teacher a Question About an Assignment

If your instructor enabled the Ask Your Teacher feature, you can send your instructor a message to ask a question about the assignment you are working on.

To do so, click the Ask Your Teacher link at the top or bottom of the assignment.
To send an Ask Your Teacher message:

1. Navigate to the top or bottom of the assignment you are working on.

2. Click Ask Your Teacher.

3. Type your message.
   
   Provide as much detail as you can so your instructor can give you useful advice. Enter any specific concerns you might have.

4. Click Save.
   
   A confirmation message displays the date and time you sent the request.

Viewing Responses to Ask Your Teacher Messages

After your instructor responds to an Ask Your Teacher message you can view the response.

1. Navigate to the top or bottom of the assignment from which you sent an Ask Your Teacher message.

2. Click Ask Your Teacher. Your message and any responses are displayed in the Ask Your Teacher window.

Asking Your Teacher to Extend the Due Date for an Assignment

If your instructor allows you to request more time or more submissions for an assignment, an Extension Request link is displayed at the end of your assignments.

Your instructor can allow automatic or manual extension requests for all assignments, for some assignment categories, or for no assignments.

Note: Only your instructor can give you extensions, change your score, allow extra submissions, or help you with the content of your assignments — not the WebAssign Customer Support staff.

Making a Manual Extension Request

To make a manual extension request, if allowed:

1. While working on your assignment, click Extension Request.

2. Click the Manual tab.

3. Enter your message and click Submit.
Your instructor will review your request and can choose to approve it, deny it, or request additional information from you before making a decision.

**Checking the Status of Your Extension Request**

**To check the status of your extension request:**

1. While working on your assignment, click **Extension Request**.
   
   Any responses your instructor has made to your request are displayed. Your instructor might provide you with information about penalties that apply to the extension or explain why your request is denied.
   
   If your instructor grants your request, your Current Assignments will display a new due date for the assignment, but you can see additional information about the extension only in the Extension Request window.
   
   Your instructor also might ask you to provide additional information before they make a decision about your request.

2. If your instructor has requested additional information, type a message and click **Submit**.

**Making an Automatic Extension Request**

**To make an automatic extension request, if allowed:**

1. While working on your assignment, click **Extension Request**.

2. Click the **Automatic** tab, if necessary.

3. Pay particular attention to the Penalty that is displayed under Settings to find out what penalty, if any, applies.

4. Do one of the following:
   
   - If you accept the terms of the extension, click **Accept Automatic Extension**. You can then begin working on the past due assignment.
• If you do not want to accept the extension, click **Cancel**. For example, a penalty might apply to each automatic extension request and you might decide not to accept the extension.
Forums

This chapter contains the following topics:

- Viewing Forums, Topics, and Posts for Your Class
- Posting Messages in a Forum Topic
- Creating New Forum Topics

Forums are for discussions with all of the members of your class. If your instructor creates a forum, you can then create topics within the forum or contribute to a current topic by posting a message.

If you do not see any forums and you would like them, ask your instructor to set up forums in WebAssign.
Viewing Forums, Topics, and Posts for Your Class

The forum hierarchy is as follows:

- Forum: The top, or first, level. A forum contains one or more topics. Only the instructor can create a forum.
- Topic: The second level in a forum. Each topic contains one or more posts.
- Post: The third and final level in a forum. Each post is displayed in a forum topic.

You can access the forums for your class either through your class Home page or by using the Communication menu.

To view forums, topics, and posts for your class:

1. If necessary, select your class from the My Classes menu.
2. Click Home or Communication.
   - On the Home page, forums are listed under Communication.
   - On the Communication page, forums are listed under Class Forums.
3. Under Class Forums, click the forum you want to view. The topics in the forum are displayed.
Forums

4. Click on a topic to see the posts associated with the topic.

- To return to the list of topics, click **Topics**.
- To return to the list of forums, click **Communication**.

**Posting Messages in a Forum Topic**

Posting a message in a forum allows you to contribute to a conversation about a topic. Posts are displayed in chronological order, from oldest to newest, and you cannot delete a message once you have posted it. Your instructor has the ability to remove your post.

**To post messages in a forum topic:**

1. Under **Class Forums**, click the forum you want to post in.
2. Click on the topic you want to post in.
3. Click **New Post**.
4. Type your message in the **Post** box.
5. Click **Save** to post your message.
Creating New Forum Topics

You can create a new forum topic if you have a discussion topic that does not belong in an existing topic. When you add a new topic to a forum the topic is available to everyone in the forum and you cannot delete it. Your instructor has the ability to remove your topic.

To create a new forum topic:

1. Under Class Forums, click the forum you want to post a new topic in.

2. Click New Topic.

3. Type your topic title in the Title box.

4. Type your topic body in the Post box.

5. Click Save to post your topic.
Personal Study Plan

This chapter contains the following topics:

- Understanding the Personal Study Plan
- Determining If a Personal Study Plan Is Set Up for Your Class
- Determining If a Personal Study Plan Is Part of Your Grade
- Taking Personal Study Plan Quizzes
- Reviewing Your Scores for a Personal Study Plan
- Viewing Tutorial Materials for a Personal Study Plan
- Rating Tutorial Materials for a Personal Study Plan
- Home Page: Personal Study Plan Panel
- Personal Study Plan Overview Page
- Personal Study Plan Tutorial Page

If available, you can use Personal Study Plan practice quizzes and tutorials to review and learn material covered in your textbook, to identify which sections you need to study, and to quiz yourself as many times as you need until you have mastered the material.

The Personal Study Plan is available only for selected textbooks, and must be enabled by your instructor. Depending on how your instructor set up the Personal Study Plan, you might use it in different ways:

- Personal Study Plan chapter quizzes might be part of your class grade, replacing or in addition to homework assignments in WebAssign.
- Personal Study Plan chapter and practice quizzes are an excellent way to study for tests or examinations.
- A Personal Study Plan might include parts of a textbook that are prerequisites for the current course, so you can brush up on anything that you might have forgotten.
- A Personal Study Plan might include parts of the textbook that cannot be covered in class, so you have an opportunity to study those sections on your own.
Understanding the Personal Study Plan

The Personal Study Plan is not a generic list of sections in the textbook that you need to study. Instead, it uses short, randomized practice and chapter quizzes to evaluate your knowledge of specific concepts and textbook sections and then suggests tutorial materials that address the specific areas where you are having difficulty. After reviewing the tutorials, you can test yourself again to confirm and reinforce what you learned.

A Personal Study Plan includes the following parts:

**Personal Study Plan Overview page**

The Personal Study Plan Overview page shows you what chapter and practice quizzes you have taken and how you scored. You can take quizzes or see tutorials from here.

**Chapter quizzes**

Chapter quizzes test your knowledge of every section of the chapter that your instructor included in the Personal Study Plan. Chapter quizzes might include questions that are more complex than practice quizzes.

When you take a chapter quiz, your scores for questions from each section of the chapter replace the scores of your practice quizzes for that chapter.

> **Note:** If your instructor set up the Personal Study Plan as part of your class grade, your overall score for the Personal Study Plan is the average of all your chapter quiz scores. Only your last chapter quiz scores are counted.

You can take a chapter quiz as many times as you want, with a new set of randomized questions each time.

**Practice quizzes**

Practice quizzes test your knowledge of one chapter section at a time, and do not count toward your grade in WebAssign. Practice quiz questions might be simpler than chapter quiz questions; if you are learning the material for the first time, or are not confident about the material, start by taking a practice quiz.

You can take a practice quiz as many times as you want, with a new set of randomized questions each time. Your instructor can view scores for both practice and chapter quizzes. This helps your instructor know if there are subject areas for which either you or the class as a whole might benefit from additional instruction.

**Tutorial materials**

Tutorial materials might include videos, interactive examples, or reading material, depending on your textbook. After you have taken a chapter or practice quiz, the tutorial materials that relate to questions you missed for the section are listed as suggestions.

Depending on how the Personal Study Plan is set up and your personal objectives, you might work through the Personal Study Plan in different ways.
<table>
<thead>
<tr>
<th>To do this</th>
<th>Do this</th>
</tr>
</thead>
</table>
| Refresh your mastery of topics that you learned before | 1. Start by taking the chapter quiz.  
2. Review your results for each section and identify any sections you need to work on.  
3. If needed, use the tutorials to brush up on specific topics.  
4. Take practice quizzes until you master each section.  
5. Take the chapter quiz to confirm your mastery of the entire chapter. |
| Practice new topics as they are taught         | 1. Take the practice quiz for each section immediately after learning the material.  
2. If needed, use the tutorials to brush up on specific topics.  
3. Take the practice quiz again before class in case you need to ask questions about something you don't understand.  
4. At the end of each chapter, take the chapter quiz to confirm your mastery of the entire chapter. |
| Review for an upcoming test or examination     | 1. Start by taking the chapter quiz.  
2. Review your results for each section and identify any sections you need to work on.  
3. If needed, use the tutorials to brush up on specific topics.  
4. Take practice quizzes until you master each section.  
5. Take the chapter quiz to confirm your mastery of the entire chapter. |
| Demonstrate your mastery of the material       | 1. Take the chapter quiz to demonstrate your mastery of the entire chapter.  
2. Review your results for each section and identify any sections you need to work on.  
3. If needed, use the tutorials to brush up on specific topics.  
4. Take practice quizzes until you master each section.  
5. Take the chapter quiz again to improve your score. |

See Also:
- Determining If a Personal Study Plan Is Set Up for Your Class on page 176
- Determining If a Personal Study Plan Is Part of Your Grade on page 176
- Taking Personal Study Plan Quizzes on page 177
- Reviewing Your Scores for a Personal Study Plan on page 178
- Viewing Tutorial Materials for a Personal Study Plan on page 179
- Rating Tutorial Materials for a Personal Study Plan on page 180
Determining If a Personal Study Plan Is Set Up for Your Class

If your instructor has set up a Personal Study Plan for your class, you can access it from your Home page.

To check if a Personal Study Plan is enabled for your class:

Click Home. If necessary, select a class from the My Classes menu.

If a Personal Study Plan is available, the Personal Study Plan panel is displayed on your Home page for the class.

See Also:
Understanding the Personal Study Plan on page 174
Home Page: Personal Study Plan Panel on page 181

Determining If a Personal Study Plan Is Part of Your Grade

Your instructor should let you know if the Personal Study Plan counts toward your grade.

Usually, this information will be included in the syllabus or a class announcement. Your instructor might also put this information in the description or instructions for the Personal Study Plan that are displayed at the top of the Personal Study Plan Overview page.

Note: Do not assume that the Personal Study Plan is not part of your grade just because your instructor neglected to state this in the description or instructions for the Personal Study Plan.

If the Personal Study Plan does count toward your grade, only the average of your scores for Personal Study Plan chapter quizzes is counted. Personal Study Plan practice quizzes do not count toward your grade in WebAssign.

See Also:
Understanding the Personal Study Plan on page 174
Taking Personal Study Plan Quizzes

You can take Personal Study Plan chapter and practice quizzes to test or demonstrate your knowledge or to identify areas where you could benefit from additional study or instruction.

Chapter quizzes

Chapter quizzes test your knowledge of every section of the chapter that your instructor included in the Personal Study Plan. Chapter quizzes might include questions that are more complex than practice quizzes.

When you take a chapter quiz, your scores for questions from each section of the chapter replace the scores of your practice quizzes for that chapter.

**Note:** If your instructor set up the Personal Study Plan as part of your class grade, your overall score for the Personal Study Plan is the average of all your chapter quiz scores. Only your last chapter quiz scores are counted.

You can take a chapter quiz as many times as you want, with a new set of randomized questions each time.

Practice quizzes

Practice quizzes test your knowledge of one chapter section at a time, and do not count toward your grade in WebAssign. Practice quiz questions might be simpler than chapter quiz questions; if you are learning the material for the first time, or are not confident about the material, start by taking a practice quiz.

You can take a practice quiz as many times as you want, with a new set of randomized questions each time. Your instructor can view scores for both practice and chapter quizzes. This helps your instructor know if there are subject areas for which either you or the class as a whole might benefit from additional instruction.

To take a Personal Study Plan practice or chapter quiz:

1. Click **Home**. If necessary, select a class from the **My Classes** menu.
   
   If a Personal Study Plan is available, the Personal Study Plan panel is displayed on your Home page for the class.

2. In the Personal Study Plan panel, click **Overview** or a chapter title.
   
   The Personal Study Plan Overview page opens. If you clicked a chapter title, that chapter is expanded and lists the sections of the chapter that are included in the Personal Study Plan.

3. Read the instructions for the Personal Study Plan.
   
   The instructions might provide information about how your instructor wants you to use the Personal Study Plan or if chapter quizzes count toward your grade.
**Note:** Do not assume that the Personal Study Plan is not part of your grade just because your instructor neglected to state this in the description or instructions for the Personal Study Plan.

4. If needed, click to expand the chapter you want to study.

5. Beside the chapter or section for which you want to take a quiz, click either **Chapter Quiz** or **Practice Quiz**.
   The chapter or practice quiz opens.

6. Answer the questions to the best of your ability.

7. Click **Submit All Questions**.

   The quiz score is displayed at the top of the quiz in the Quiz Results section, along with your first and best scores.

   You can review which of your answers were correct and which were not. If available, you can use Practice Another Version or tutorial links to work on specific questions.

   • Click **Overview** to go back to the Personal Study Plan Overview page.
   • Click **Tutorial** to open the Tutorial page and use online resources to learn the relevant material before you retake the quiz.
   • Click **Retake Quiz** to retake the quiz with different randomized values.

**See Also:**
Understanding the Personal Study Plan on page 174
Determining If a Personal Study Plan Is Part of Your Grade on page 176
Personal Study Plan Overview Page on page 181

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**Reviewing Your Scores for a Personal Study Plan**

You can review your scores for chapter and practice quizzes on a Personal Study Plan.

You might want to review your scores to see which sections you need to study, or to calculate your overall score for the Personal Study Plan, if it is part of your grade.

**To view your scores for a Personal Study Plan:**

1. Click **Home**. If necessary, select a class from the **My Classes** menu.
   If a Personal Study Plan is available, the Personal Study Plan panel is displayed on your Home page for the class.

2. In the Personal Study Plan panel, click **Overview** or a chapter title.
   The Personal Study Plan Overview page opens. If you clicked a chapter title, that chapter is expanded and lists the sections of the chapter that are included in the Personal Study Plan.

3. If needed, click to view practice quiz scores for a chapter.
Your scores are displayed on the Personal Study Plan Overview page.

**Note:** Only your most recent scores are shown. If you took a chapter quiz more recently than a practice quiz in that chapter, the practice quiz score reflects your score for questions on the chapter quiz that relate to that section.

If the Personal Study Plan is part of your grade, you can calculate your overall Personal Study Plan score by averaging your chapter quiz scores. Add up all of your chapter quiz scores and then divide by the number of chapter quizzes. The weight of the Personal Study Plan toward your final grade is determined by your instructor.

**See Also:**
Understanding the Personal Study Plan on page 174  
Personal Study Plan Overview Page on page 181

### Viewing Tutorial Materials for a Personal Study Plan

You can view tutorial materials for every section of the textbook included in a Personal Study Plan.

Tutorial materials might include videos, interactive examples, or reading material, depending on your textbook. After you have taken a chapter or practice quiz, the tutorial materials that relate to questions you missed for the section are listed as suggestions.

These materials are displayed for one reason only: to give you the supporting learning material you need to be successful in the course. The more you use them, the more you learn.

#### To view a tutorial for a Personal Study Plan:

1. Click **Home**. If necessary, select a class from the **My Classes** menu.
   
   If a Personal Study Plan is available, the Personal Study Plan panel is displayed on your Home page for the class.

2. In the Personal Study Plan panel, click **Overview** or a chapter title.
   
   The Personal Study Plan Overview page opens. If you clicked a chapter title, that chapter is expanded and lists the sections of the chapter that are included in the Personal Study Plan.

3. If needed, click **[]** to view the sections included in a chapter.

4. Click **Tutorial** to the right of the progress bar for any section.
   
   The Personal Study Plan Tutorial page opens.

5. Click the link for the tutorial that you want to view.

The tutorial opens.

**Note:** Some tutorial materials require Flash 10 or higher. You can obtain the free Flash plug-in from www.adobe.com/products/flashplayer/.
After you have finished using the tutorial, close it. You might be asked to rate the tutorial; rating tutorial materials is optional, and your rating is not shared with your instructor.

See Also:
Understanding the Personal Study Plan on page 174
Rating Tutorial Materials for a Personal Study Plan on page 180
Personal Study Plan Tutorial Page on page 183

Rating Tutorial Materials for a Personal Study Plan

After viewing a tutorial, you can rate it as helpful or not. Rating tutorial resources is optional, but the aggregate ratings are displayed on the Personal Study Plan Tutorial page and can help other students know which tutorials they should use.

Before you can rate tutorials for a Personal Study Plan, you must have viewed at least one of the plan's tutorials.

Your ratings of tutorial resources are not shared with your instructor, and are not displayed individually to your fellow students. Instead, they are aggregated with other students' ratings. You can rate each tutorial only once.

To rate a tutorial:

1. View a tutorial. When you are finished, close the tutorial.

   Unless you have previously rated a tutorial and selected Don't show me this again, a feedback window is displayed.

   ![Teach Me Feedback](image)

   2. If the feedback window is not displayed, click Rate This on the Personal Study Plan Tutorial page for the tutorial you want to rate.

      Rate This is not displayed for tutorials that you have already rated.

   3. In the feedback window, rate the tutorial and optionally add a comment.

      - If the tutorial was helpful, select Yes.
      - If the tutorial was not helpful, select No.

   4. If you do not want to see the feedback window when you close Personal Study Plan tutorials in the future, select Don’t show me this again.

   5. Click Send to submit your rating.
Home Page: Personal Study Plan Panel

The Personal Study Plan panel on your Home page displays the chapters included in the Personal Study Plan and your most recent chapter quiz scores.

To view this panel, click Home. If necessary, select a class from the My Classes menu.

The Personal Study Plan panel is displayed only when a Personal Study Plan is set up for your class.

### Item Description

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Study Plan - textbook name</td>
<td>The title of the Personal Study Plan panel displays the name of the textbook for the Personal Study Plan. If your class uses more than one textbook with an enabled Personal Study Plan, a separate Personal Study Plan panel is displayed for each textbook.</td>
</tr>
<tr>
<td>Overview</td>
<td>Click Overview to open the Personal Study Plan Overview page.</td>
</tr>
<tr>
<td>Chapter name</td>
<td>The Personal Study Plan panel lists each chapter in the Personal Study Plan. Click a chapter title to open the Personal Study Plan Overview page with that chapter expanded.</td>
</tr>
<tr>
<td>Score</td>
<td>Your latest score for each chapter quiz is displayed for each chapter.</td>
</tr>
</tbody>
</table>

See Also:
Personal Study Plan Overview Page on page 181

Personal Study Plan Overview Page

The Personal Study Plan Overview page displays all the chapters and sections included in the Personal Study Plan, your most recent Personal Study Plan quiz scores, and links to take Personal Study Plan quizzes or view tutorial materials.

To view the Personal Study Plan Overview page, click Home. If necessary, select a class from the My Classes menu. In the Personal Study Plan panel, click Overview or a chapter title.
Note: From a Personal Study Plan chapter or practice quiz, or from the Personal Study Plan Tutorial page, you can click either Overview or Personal Study Plan to view the Personal Study Plan Overview page.

You can access the Personal Study Plan Overview page only when a Personal Study Plan is set up for your class.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook name</td>
<td>Displays the name of the textbook for the Personal Study Plan. If your class uses more than one textbook with an enabled Personal Study Plan, each textbook's Personal Study Plan will open its own Personal Study Plan Overview page.</td>
</tr>
<tr>
<td></td>
<td>Opens the WebAssign Student Help System in a new window and displays information about using Personal Study Plans.</td>
</tr>
<tr>
<td>About</td>
<td>Displays information about the Personal Study Plan. Your instructor can customize this information.</td>
</tr>
<tr>
<td>Instructions</td>
<td>Displays instructions for using the Personal Study Plan. Your instructor can customize this information.</td>
</tr>
<tr>
<td></td>
<td>Expands a chapter to show section-level information.</td>
</tr>
<tr>
<td></td>
<td>Collapses a chapter to hide section-level information.</td>
</tr>
<tr>
<td>Chapter name</td>
<td>Identifies a chapter included in the Personal Study Plan. Your instructor might have configured the Personal Study Plan not to include every chapter in the textbook.</td>
</tr>
</tbody>
</table>
### Personal Study Plan

#### Item Description

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Alert icon]</td>
<td>Identifies a section that your instructor has marked as a key concept. What your instructor means when they flag a section as a key concept might vary, but the intent is that you should pay special attention to this section.</td>
</tr>
<tr>
<td><strong>Section name</strong></td>
<td>Identifies a section included in the Personal Study Plan. Your instructor might have configured the Personal Study Plan not to include every section in the chapter.</td>
</tr>
<tr>
<td><strong>Chapter Quiz</strong></td>
<td>Opens a Personal Study Plan chapter quiz.</td>
</tr>
<tr>
<td><strong>Practice Quiz</strong></td>
<td>Opens a Personal Study Plan practice quiz.</td>
</tr>
</tbody>
</table>
| **Progress bar with score** | Your scores for chapter and practice quizzes are shown in progress bars that indicate your performance in relation to the mastery levels set by your instructor.  
  • Green indicates that the score equals or exceeds the mastery level.  
  • Yellow indicates that the score is at least 75% of the mastery level.  
  • Red indicates that the score is less than 75% of the mastery level.  |
| ![Note icon]          | **Note:** Only your most recent scores are shown. If you took a chapter quiz more recently than a practice quiz in that chapter, the practice quiz score reflects your score for questions on the chapter quiz that relate to that section. |
| **Tutorial**          | Opens the Personal Study Plan Tutorial page, which lists tutorial materials for the section.                                                   |

**See Also:**
- Home Page: Personal Study Plan Panel on page 181
- Personal Study Plan Tutorial Page on page 183

### Personal Study Plan Tutorial Page

The Personal Study Plan Tutorial page displays tutorial materials for a specific section of the Personal Study Plan.

To view the Personal Study Plan Tutorial page, click **Home**. If necessary, select a class from the **My Classes** menu. In the Personal Study Plan panel, click **Overview** or a chapter title. Then, click **Tutorial** for a section.

**Note:** From a Personal Study Plan chapter or practice quiz, or from the Personal Study Plan Overview page, you can click **Tutorial** to view the Personal Study Plan Tutorial page.

You can access the Personal Study Plan Tutorial page only when a Personal Study Plan is set up for your class.
# Personal Study Plan - Tutorial

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Textbook name</strong></td>
<td>Displays the name of the textbook for the Personal Study Plan.</td>
</tr>
<tr>
<td><strong>Chapter name</strong></td>
<td>Identifies the chapter for which you are viewing tutorials.</td>
</tr>
<tr>
<td><strong>Section name</strong></td>
<td>Identifies the section for which you are viewing tutorials.</td>
</tr>
<tr>
<td><strong>Chapter Quiz</strong></td>
<td>Opens a Personal Study Plan chapter quiz.</td>
</tr>
<tr>
<td><strong>Practice Quiz</strong></td>
<td>Opens a Personal Study Plan practice quiz.</td>
</tr>
<tr>
<td><strong>Progress bar with score</strong></td>
<td>Your scores for chapter and practice quizzes are shown in progress bars that indicate your performance in relation to the mastery levels set by your instructor.</td>
</tr>
<tr>
<td></td>
<td>• Green indicates that the score equals or exceeds the mastery level.</td>
</tr>
<tr>
<td></td>
<td>• Yellow indicates that the score is at least 75% of the mastery level.</td>
</tr>
<tr>
<td></td>
<td>• Red indicates that the score is less than 75% of the mastery level.</td>
</tr>
<tr>
<td><strong>Suggestions</strong></td>
<td>Lists tutorial materials that relate to questions you missed on either the chapter or practice quiz. See Kinds of Tutorial Materials on page 185.</td>
</tr>
<tr>
<td><strong>Rating</strong></td>
<td>Shows the number of students who rated a tutorial as helpful.</td>
</tr>
</tbody>
</table>

- **Note:** Only your most recent scores are shown. If you took a chapter quiz more recently than a practice quiz in that chapter, the practice quiz score reflects your score for questions on the chapter quiz that relate to that section.
### Item | Description
---|---
 воп | Shows the number of students who rated a tutorial as not helpful.
 Rate This | Opens the feedback window for you to rate a tutorial as helpful or not.
 Additional Resources | Lists other tutorial materials that are available for the section. See Kinds of Tutorial Materials on page 185.
 Overview | Opens the Personal Study Plan Overview page.

### Kinds of Tutorial Materials

Tutorial materials might include videos, interactive examples, or reading material, depending on your textbook. After you have taken a chapter or practice quiz, the tutorial materials that relate to questions you missed for the section are listed as suggestions.

**Note:** Some tutorial materials require Flash 10 or higher. You can obtain the free Flash plug-in from [www.adobe.com/products/flashplayer/](http://www.adobe.com/products/flashplayer/).

Some common kinds of tutorial materials are listed below.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>воп</td>
<td>Flash paper (typically for reading text)</td>
</tr>
<tr>
<td>видео</td>
<td>Video</td>
</tr>
<tr>
<td>🎧</td>
<td>Audio recording</td>
</tr>
<tr>
<td>📋</td>
<td>Interactive tutorial (might not be in Flash)</td>
</tr>
<tr>
<td>📜</td>
<td>PDF</td>
</tr>
</tbody>
</table>

**See Also:**

Personal Study Plan Overview Page on page 181
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