Using eHW

Great news! The Web-based electronic homework system (also called Möbius) will immediately grade your answers and will provide worked-out solutions. It is only $20 for an entire year's worth of access. You will use it for all of your graded homework.

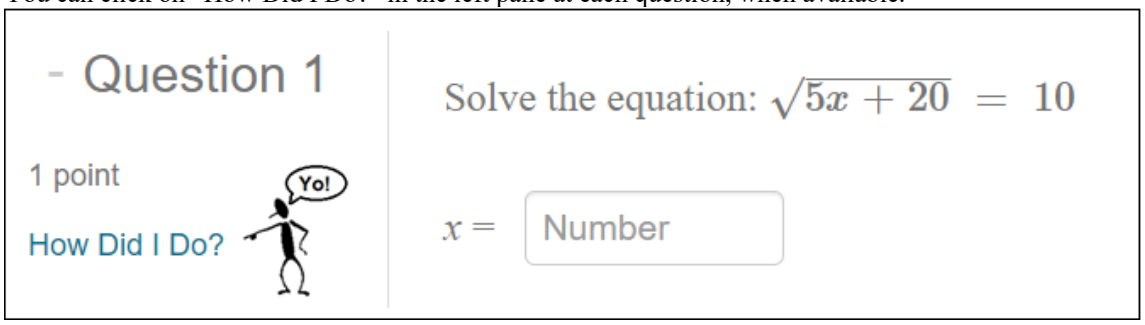
Using eHW for LEARNING and not simply for EARNING

On the eHW home page is a one minute (silent) video showing the difference between using eHW for *earning* vs. *learning.*

(Footage edited from youtube.com/watch?v=7clAJJNsdmQ)

To make the most out of eHW,

- Try the assignments as many times as you can. You have unlimited attempts before the deadline. Subsequent attempts show variations of the problem with the same learning objective.
- Use "Just for Practice" sets to see worked out solutions of problems that are similar to those on your assignment. You can click on "How Did I Do?" in the left pane at each question, when available.



The "Just for Practice" sets provide you a powerful study technique called *retrieval practice* where you train your brain to bring the correct information to mind that is needed for the task at hand.

- Use the "Flash Cards" to hone in on particular learning outcomes. Many students credit their use of flash cards prior to quizzes and exams as the reason for their high performance. Repeated practice can move knowledge from short term to long term memory, as discussed here.

Need Help?

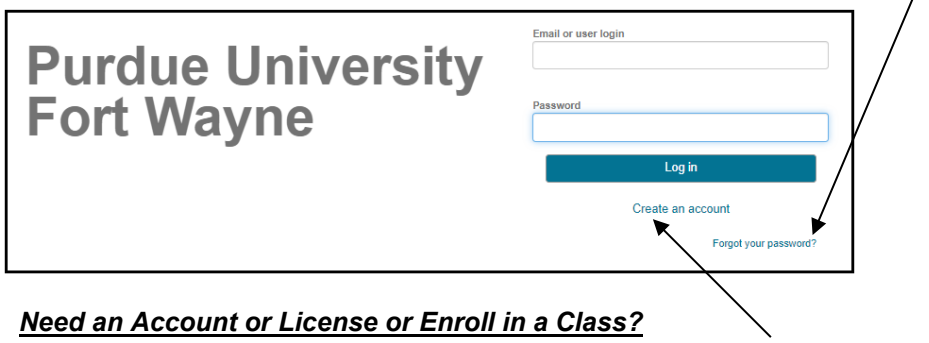
Once you are logged in, click on the word **Help** near your name on the top of the screen to access online help. You can also check out the **Möbius Support Site** for help, where you can type a topic in the search box or peruse the popular choices on the page. In addition, you can e-mail **ehwtechsupport@pfw.edu** for troubleshooting. It will be helpful if you can describe the problem in as much detail as possible or provide screenshots.

Getting to the eHW Site

To access eHW, click **HERE**.

Already Have an Account?

If you have already had previous access to Möbius, enter your email and password to login.
If you forgot your password, click on the words **Forgot your password**. You will be prompted for the email for your account, to which a system generated password will be sent. Once you login again you can change it by clicking on your name in the top right corner and then click on **Password Update**.)



Need an Account or License or Enroll in a Class?

If you have not already had previous access to Möbius, click on "Create an account."
For detailed step-by-step instructions on how to create an account, enroll in a class, and purchase a license, see your

Your Work Is Automatically Saved

All of your work is saved up until the last question you were working on, so in case the Internet connection goes down, you have not lost your previous work. You do not have to complete an assignment in one sitting.

How to Submit an Assignment

Be aware that these two buttons behave differently: Submit Assignment | Quit & Save
After you complete an electronic homework assignment, the only way for your instructor to receive your grade is if you click on the first button, **Submit Assignment**. Your work will be instantaneously graded and you will see your score.
You would click on the second button, **Quit & Save**, to return to the assignment to work on it later.
If you can see it in your Gradebook link, your instructor can see it as well.

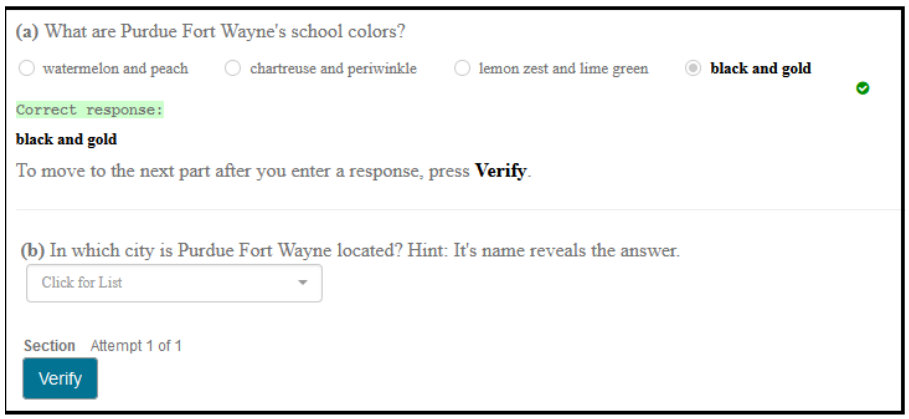
If a time limit is set for a quiz or test, then it counts down from when you started the assignment. If you close your browser (or use the Quit & Save button) before clicking on Submit Assignment, the timer will continue to count down.

Questions with Multiple Parts Presented One at a Time

Some questions may be delivered to you one part at a time, such as the one shown below. After you enter your answer, click on **Verify** to move to the next part.

In some questions, the correct answer to the first part of the question may display before you enter the answer to the next part.

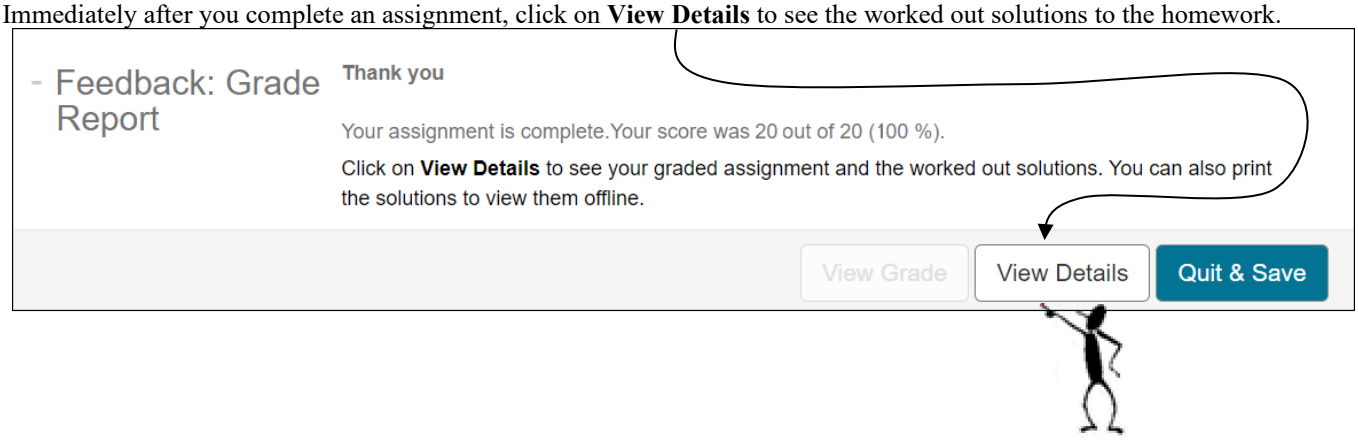
After clicking **Verify,** part **(b)** of the question will display.



Be sure to complete all parts of the questions.

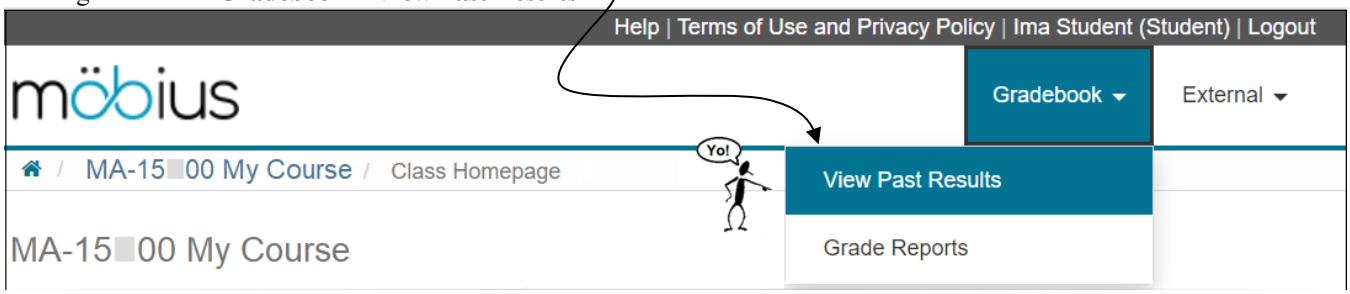
How to See Your Grades and Past Results

1. Immediately after you complete an assignment, click on **View Details** to see the worked out solutions to the homework.

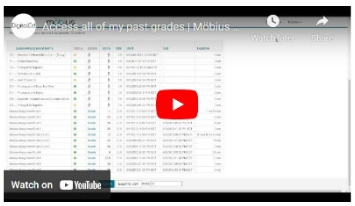


You will be able to view any detailed feedback that is available, with an option to print.

2. Throughout the semester, you may wish to look at the questions and solutions of past eHW assignments that you completed. The highest score on your assignment appears on the eHW homepage, but you can see **all** graded attempts by clicking on the link **Gradebook > View Past Results**.



This **video** shows you how to view the results of a past grade.



Click on this **link** to see online help on how to select which assignments you would like to view.

For more on using the Gradebook, see the online help by clicking **HERE**.
These links and more are also on the eHW Home Page.

Working with Math in Responses

You enter formulas using standard mathematical notation similar to that used in a graphing calculator, following the rules for standard order of operations. Some helpful tips follow for entering responses.

Avoiding Common Math Errors

1. ***Exponents:*** Use the caret, ^, for exponentiation, and the letter e for 2.718...
2. ***Parentheses:*** As on a graphing calculator, you must use parentheses.
   When in doubt, you can use the **Preview** option to see it look the way it would in a math text.
   Examples:

   For $2^{x/13}$, you must type `2^(x/13)`

   not `2^x/13` . . . which would be interpreted as $\frac{2^x}{13}$

   For $y = \frac{x}{4(x-2)}$, you must type `y = x/(4(x-2))`

   not `y = x/4(x-2)` . . . which would be interpreted as $\frac{x}{4}(x-2)$

3. ***Multiplication:*** You can type an asterisk (i.e. `*`) for multiplication, or just type a letter and a number together (i.e. `2x`).
4. ***Square Roots:*** The square root function is `sqrt(x)` or you can just type `x^(1/2)` or `x^0.5` instead. Note again that, like on a graphing calculator, `x^1/2` means $\frac{x^1}{2}$.
5. ***Absolute Value:*** The absolute value function is `abs(x)`, so something like $2|x+1|-3$ would be typed as `2abs(x+1)-3`.

6. ***Argument of Functions:*** You should always place the input of a function in parentheses. For example, for $\sqrt{3x}$ you must type `sqrt(3x)`,
   not `sqrt 3x` which would be interpreted as $\sqrt{3}\cdot x$

For MA 15400 or MA 15900 students especially:

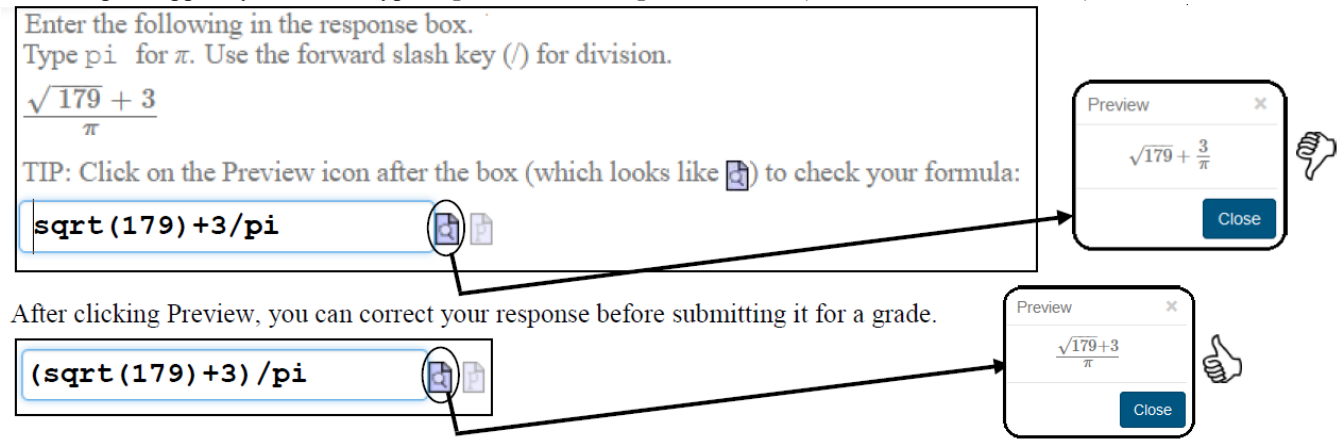
7. ***π:*** Simply type `Pi` or `pi`. (However, not `PI`.)

8. ***Trigonometric Functions:*** The names for common mathematical functions (sin, cos, etc.) are just what you would expect. The inverse trig functions are arcsin(x), arccos(x), and arctan(x). Also, trigonometric functions are all set to work in radians.

Using the Preview Option in Responses

Use the **Preview** option to view your response as a typeset mathematics expression. **Preview** demonstrates how the system interprets your entry (inspecting it for misplaced parentheses and other unintended keystrokes).

For example, suppose you were to type `sqrt(179)+3/pi` in the box. (Note that this is incorrect.)



Nested Parentheses

To computers and graphing calculators,
brackets such as [or]
or braces such as { or }
are not equivalent to parentheses.

For example, to enter $3^{2/(x+1)}$ you would type `3^(2/(x+1))`

as opposed to `3^(2/[x+1])`.

TIP: Using spaces may help readability.
For example, the expression `3^(2/(x+1))` could be typed `3^( 2/(x+1) )` to be read more clearly.
This is where using the **Preview** option, shown above, can be very helpful.

Order of Operations

Order of precedence is as follows:

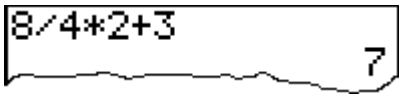
Parentheses
Exponents
Multiplication and **D**ivision (from left to right)
Addition and **S**ubtraction (from left to right)

TIP: Some students use the mnemonic:
Please
Excuse
My **D**ear
Aunt **S**ally

For example, if you were to compute $8 \div 4 \times 2 + 3$, multiplication and division outrank addition, but multiplication and division are the same rank.

$$8 \div 4 \times 2 + 3 = \frac{8}{4} \times 2 \ + \ 3 = \ 4 \ + \ 3 \ = \ 7$$

Notice this is what you would obtain from a graphing calculator:



Rules for order of operations are necessary so that a unique value results. Consider the following:

$$8 \div 4 \times 2 + 3 \ \neq \ \frac{8}{4 \times 2} \ + \ 3 = 1 \ + \ 3 \ = \ 4$$

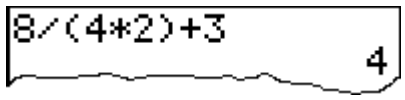
$$8 \div 4 \times 2 + 3 \ \neq \ \frac{8}{4 \times 2 + 3} \ = \frac{8}{11}$$

$$8 \div 4 \times 2 + 3 \ \neq \ \frac{8}{4} \times \ (2 + 3) \ = \ 2 \times 5 \ = \ 10$$

Parentheses outrank all operations. If your intention is to have $\frac{8}{4 \times 2} \ + \ 3$, the fraction bar serves as a grouping symbol.

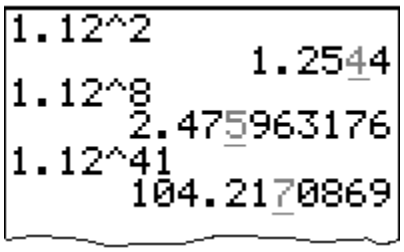
The expression $\frac{8}{4 \times 2} \ + \ 3$ is equivalent to $\frac{8}{(4 \times 2)} \ + \ 3$.

So if our intention is $\frac{8}{4 \times 2} \ + \ 3$, we need parentheses: $8 \div (4 \times 2) + 3$.



Rules for Rounding

Standard rules for rounding numbers apply.
For example, suppose we are rounding the following calculations to two decimal places.



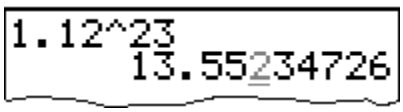
Look to the right of the rounding digit, which we have underlined.

If it is 4 or lower, we truncate. So to two decimal places, $1.12^2 \approx 1.25$

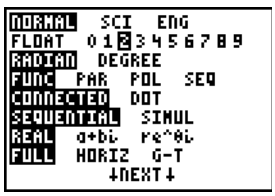
If it is 5 or higher, we round up. So to two decimal places, $1.12^8 \approx 2.48$

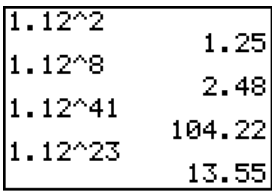
and to two decimal places, $1.12^{41} \approx 104.22$

What is 1.12^{23} to two decimal places? Since the digit to the right of the rounding digit is 2, we have $1.12^{23} \approx 13.55$.

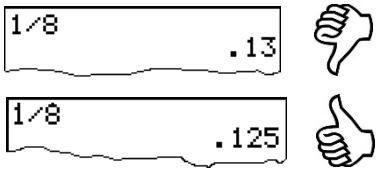


Your calculator mode can be helpful to report answers to a selected number of digits.





However, use **caution** when doing so! It is easy to forget to change it back to FLOAT and report incorrect results when you need more precision.



If you want 1/8 reported to full precision and your mode is not set to FLOAT, you could be misled by your calculator!