PURDUE
UNIVERSITY
FORT WAYNE

**Welcome to MA 15300 College Algebra**
**Fall 2025**

**CLASS MEETING TIME:** Tuesday, Thursday 9:00 - 10:15 am, KT G47

**INSTRUCTOR:** Yevgeniy Leybman

**MY OFFICE:** KT 231

**MATH DEPT. OFFICE:** KT 200, (260) 481-6821

**HOW TO REACH ME:** E-mail: leybmany@pfw.edu

**OFFICE PHONE:** (260) 481-5790

**OFFICE HOURS:** Tuesday, Thursday, 10:30 – 11:15 am, or by appointment.

**PRE-REQUISITE:** MA 11100 with B- or higher or placement by departmental exam. This course is primarily intended for students who have completed at least two years of high school algebra.

**COURSE WEBSITE:** Go to purdue.brightspace.com to access the course. Click on Purdue Fort Wayne, enter your username and password, and click Log In. The suggested browsers are Chrome and Firefox. Explore and become familiar with the content and resources available in Brightspace.

**MATERIALS:**

- Have a notebook plus binder to organize your notes.
- Access to eHw, commercially called Mobius, will be required for all your graded homework.
- Follow the steps on Brightspace to purchase a license ($20) and to access it. Past students have shared that eHw was worth every penny. It gives you the essential practice you need to succeed.
- A graphing calculator will be used for activities, assignments, quizzes, and tests. The TI-84 Plus or TI-84 CE Plus are the tools of choice.
- The text *Functions Modeling Change,* 6th edition by Connally, et al, is option, but recommended. Some students have shared they did fine without the text and learned everything from doing eHw.

**OBJECTIVES AND CONTENT:** This course emphasizes mathematical modeling of real-world problems using linear, exponential, and trigonometric functions. The algebraic, graphing, and numerical approaches will be used as appropriate. We will cover portions of chapters 1 – 6 and chapter 11 on the test. Mathematical Models will be analyzed using also quadratic polynomial and rational functions. Learning outcomes are listed in the lessons provided on Brightspace in the Supplementary Resources folders for each section of the test. See the Flash Cards on Mobius for assessment questions aligned to each learning outcome.

**SUCCESS:** I believe in your success and want to support you to meet your goals. You can do it, but it will require that you do the work required and make the commitment to do what it takes to succeed. Prerequisite Skills Quiz: This quiz provides quick and early feedback to you on your proficiency with the skills needed for the course so you know if you have the skills needed. Study the eHw assigned math background needed for MA 15300. There are eHw flash cards to practice the content on the eHw website.

**GRADING:**

| | |
|---|---|
| Prerequisite Skills Quiz: | 3.125% |
| Participation: | 3.125% |
| eHw assignments: | 15.625% |
| Quizzes: | 15.625% |
| Test 1: | 12.5% |
| Test 2: | 12.5% |
| Test 3: | 12.5% |
| Final Exam | 25% |
| Total | 100% |

**GRADING SCALE:**

| | |
|---|---|
| 90-100 % | A |
| 80-89 % | B |
| 70-79 % | C |
| 60-69 % | D |
| 59 % or less | F |

**PARTICIPATION:** Since much of the learning of this course occurs interactively during class time, to earn your participation credit in class meetings you have to stay until class ends as well as contribute to the learning environment of the class. If you are blatantly not participating in class – such as on your phone, doing homework for other classes, being disruptive, contributing to a choral premature departure, book bag zip, or anything to lower the morale, you will not earn your participating points for that day.

**eHw ASSIGNMENTS:** Past students cite eHw as the key to their success. You have unlimited attempts until the due date and the highest score is taken. Please read the section on eHw in the General Course Information for help how to obtain access and use eHw. You are encouraged to complete the assignment multiple times (even after you have earned a perfect score). Research shows that students who do this retain the material better for quizzes and tests.

**ATTENDANCE:** Attendance will be taken and recorded.

**FINAL EXAM:** The date of the two hour final exam will be **Mon., Dec. 15, 3:30 p.m. - 5:30 p.m.** It is a paper and pencil test. The final exam covers Section **11.4-11.5** and is also comprehensive (covering all material previously tested).

**TECHNOLOGY:** Cell phones should not be visible or in use during class time. Please turn them off and any other electronic devices that buzz, beep, play music or make other noise. They are distracting to you me, and your classmates. TI-89 or TI-92, as well as other symbolic manipulation calculators WILL NOT be allowed during tests and quizzes.

**eHW GUARANTEE:** If you do find that your answer is correct and the system tells you otherwise (due to mathematics) report it to the course coordinator, John LaMaster lamaster@pfw.edu, and you will get double points for that question.

**OTHER:**
* The math computer labs with software are in KT 118 KT 204 and KT 217.
* Tutoring is available in KT G 19 (free).
* Weather related schedule changes will be announced on area radio

**DEADLINES:** Deadlines for eHW *(Möbius)* homework assignments and weekly quizzes are found in the Brightspace calendar and are not listed here. To keep track of all deadlines in this course you can use the calendar on Brightspace or use the Brightspace Pulse App to receive notifications. Directions on acquiring Brightspace Pulse App are in the checklist in the **Start Here** module.

**CATALOG DESCRIPTION:** Review of algebraic operations, factoring, exponents, radicals and rational exponents, and fractional expressions. Linear and quadratic equations and modeling, problem solving, and inequalities. Graphs of functions and transformations, including polynomial, rational, exponential, and logarithmic functions with applications.

**STUDENT LEARNING OBJECTIVES:** The course catalog lists the following learning outcomes:

1. To correctly perform algebraic operations, to solve algebraic equations of degree two, to perform operations with exponents and radicals.
2. To sketch graphs of certain polynomial, exponential and logarithmic functions.
3. To solve systems of equations and inequalities.

In addition to the above, see also the objectives listed here

**What is the best way to use Artificial Intelligence (AI) and eHW *(Möbius)* as a student in this class?**
Use AI and eHW for systematic, regular practice with a targeted focus, the way professionals develop mastery in order to help you learn the content as opposed to just getting an answer to earn points. The use of AI is recommended to:

- help you learn a difficult concept.
- tell you how a concept might be important for your career path.
- create example quiz questions. "In terms of difficulty, on a scale of mild, medium, or spicy, make it <*choose a level*>."
- tell you the best ways to study for an exam.
- help you in these ways suggested by ChatGPT

PURDUE UNIVERSITY FORT WAYNE

# Course Information for MA 15300 and MA 15400 Purdue University Fort Wayne

## 1. The Course Goals

Many students take this course because it is required for their degree. But there are better reasons than that!
In *College Algebra* (MA 15300) and *Trigonometry* (MA 15400) you will:

- Highlight the link of mathematics to the real world.
- Develop a wide base of mathematical knowledge, including
  - basic skills and concepts,
  - a functional view of mathematics, including graphical, algebraic, numerical, and contextual viewpoints,
  - properties and applications of some of the basic families of functions
  - geometric visualization,
  - problem solving, predicting, critical thinking, and generalizing.
- Incorporate the use of general academic skills such as
  - communicating mathematics concepts,
  - understanding and using technology, and
  - working collaboratively.

*The above aligns with the foundational intellectual skills for quantitative reasoning in the **Indiana College Core** and is based on the **College Algebra Guidelines** of the Mathematical Association of America's subcommittee **Curriculum Renewal Across the First Two Years** (CRAFTY) as described on page 45 of their report **here**.*

## 2. General Education Course Learning Outcomes

*College Algebra and Trigonometry* addresses all eight outcomes in Area 3: Quantitative Reasoning of the Indiana College Core (listed below). Through hands-on activities and assessments you will

- create and interpret mathematical models to solve problems presented as real world situations,
- formulate, validate, and analyze solutions to problems using mental, paper and pencil, algebraic, and technology-based techniques as appropriate
- utilize graphing calculators to find the solution to problems which cannot be solved by pencil and paper, as well as explore mathematical patterns and visualize mathematical ideas,
- recognize and cite assumptions made in real world problem solving, and
- communicate your reasoning.

**Indiana College Core Area 3 Quantitative Reasoning Competencies**

***Interpretation and Representation***
3.1. Interpret information that has been presented in *mathematical form**.
3.2. Represent information/data in *mathematical form** as appropriate
**mathematical form* = functions, equations, graphs, diagrams, tables, words, and geometric figures.*
***Mathematical Procedures***
3.3. Demonstrate skill in carrying out mathematical (e.g. algebraic, geometric, logical, statistical) procedures flexibly, accurately, and efficiently to solve problems.
***Critical Thinking***
3.4. Analyze mathematical arguments, determining whether stated conclusions can be inferred.
***Application / Analysis***
3.5. Communicate which assumptions have been made in the solution process.
3.6. Analyze mathematical results in order to determine the reasonableness of the solution.
3.7. Cite the limitations of the process where applicable.
***Communication***
3.8. Clearly explain the representation, solution, and interpretation of the math problem.

Click **HERE** for more information about the Indiana College Core.

## 3. Study Time Outside of Class

This course requires a solid effort. During the Fall or Spring Semester, the faculty at PFW expect you to study a minimum of 6 hours a week outside of class working on mathematics for MA 15300 or MA 15400. This pace is accelerated in the summer sessions or for 8 week classes.

## 4. Accessibility and Accommodations

If you have a disability and need assistance, special arrangements can be made to accommodate most needs. Contact the Director of Services for Students with Disabilities (SSD). They are located at Walb Student Union, Room 113, telephone (260) 481-6658, as soon as possible to work out the details. For more information, please visit the Web Site for SSD: **www.pfw.edu/disabilities**.

## 5. Prerequisite Skills

MA 15300 and MA 15400 are intended for students who have completed two years of high school algebra. The prerequisite for MA 15300 is completion of Intermediate Algebra MA 11100 with a B- or higher or placement by departmental exam. The prerequisite for MA 15400 is MA 15300 with a C- or higher or placement by departmental exam. Look at the kinds of problems in the Math Background assignment on eHW. If they do not look familiar, perhaps you need to drop the class and take either the prerequisite Intermediate Algebra MA 11100. For those needing MA 15300, PFW does not offer a course lower than MA 11100.

## 6. Graphing Calculators

Graphing calculators are used for activities and assignments in and out of class. The TI-84 Plus or TI-84 Plus CE is strongly recommended. You may use another equivalent calculator* but you will be responsible for understanding how to use it. Your instructor will be most familiar with the TI-84 Plus or TI-84 Plus CE and may not be able to offer you help with other calculators.

*Your calculator should have features which enable you to find **intersection points**, **zeros (or roots), maximum/minimum points** of graphs, and explore functions numerically with **tables**. If you have questions whether your model of calculator is allowed, ask your instructor.

**Graphing Calculator Loan Program:** You can rent a TI-84 Plus for the semester for a nominal fee from the Purdue University Fort Wayne Students' Government Association, located in the Walb Student Union Room 225, Telephone 260-481-6586. Supplies are limited and are usually depleted the first week of classes. However, some students may have dropped a class which requires a calculator so one could just be sitting here on a shelf waiting just for you. More information is **HERE**.

## 7. Computer and Internet Access

Student-access computer labs are located around campus. For a complete list, click **HERE**. To use the computers in these labs you must have an activated PFW computer Lab Account, which you received when you enrolled in PFW. For assistance contact the Help Desk at Kettler 206 or email **helpdesk@pfw.edu**. See more information **HERE**.

**Borrowing a Laptop or Desktop System:** Information Technology Services (Call: 260-481-6030, Email: helpdesk@pfw.edu) has a limited number of laptops and desktop systems that may be loaned to students, faculty, and staff who have internet access available at home. The desktop systems do not have wireless capability, so they must be connected directly to your wireless router via a standard Ethernet cable. Additionally, Helmke Library (Call: 260-481-6505, e-mail: ref@pfw.edu) has a limited number of laptops that may be checked out by students.

## 8. Office Hours and Free Tutoring

- Instructors' **Office Hours** are open to students in any section. See Brightspace for the current semester schedule.
- **Face-to-Face tutoring** is available in Kettler Hall G19. Hours are posted on Brightspace.
- The **Piazza Discussion Boards** for MA 15300 and MA 15400 are at **https://piazza.com/pfw** and includes students from all sections of the course. You can post anonymously to the class if you wish. Students often answer other students' questions.

**9. *e-Homework (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.

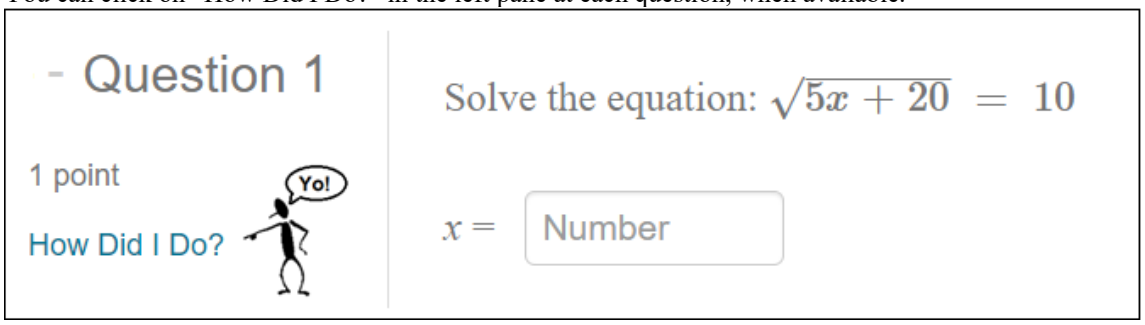
***Using eHW for LEARNING and not simply for EARNING***

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.

***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*, enter through Brightspace in the module *e-HW* (Möbius).

## ***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.**

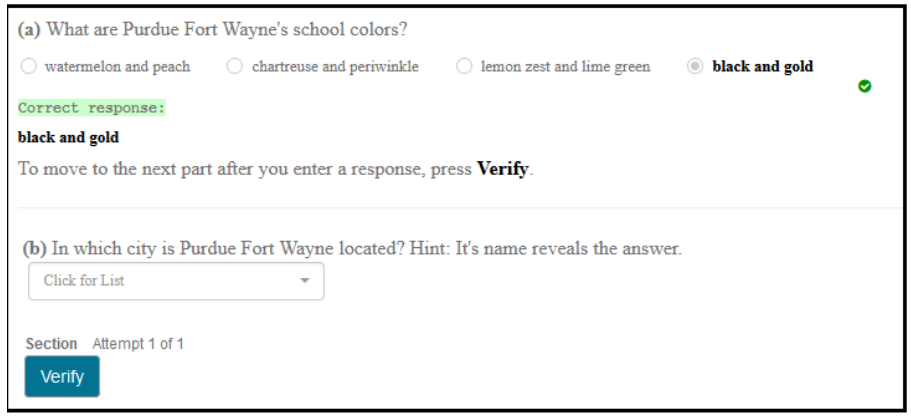
If a time limit is set for a quiz or test, then it counts down from when you started the assignment. If you close your browser (or use the Quit & Save button) before clicking on Submit Assignment, the timer will continue to count down.

## ***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.

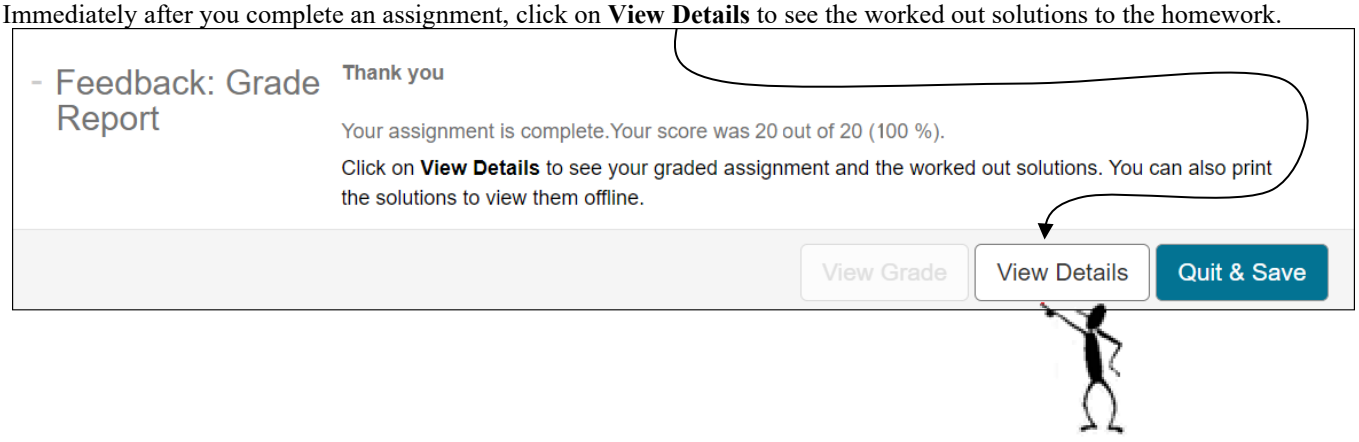

After clicking **Verify,** part **(b)** of the question will display.




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. Go to Brightspace in the module *e-HW* (Möbius) and click on the Möbius Gradebook, where you can see **all** graded attempts in the View Panel. Click on the **Details** link to look back at the questions and the solutions.


***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. ***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 $\sqrt{3}\cdot x$

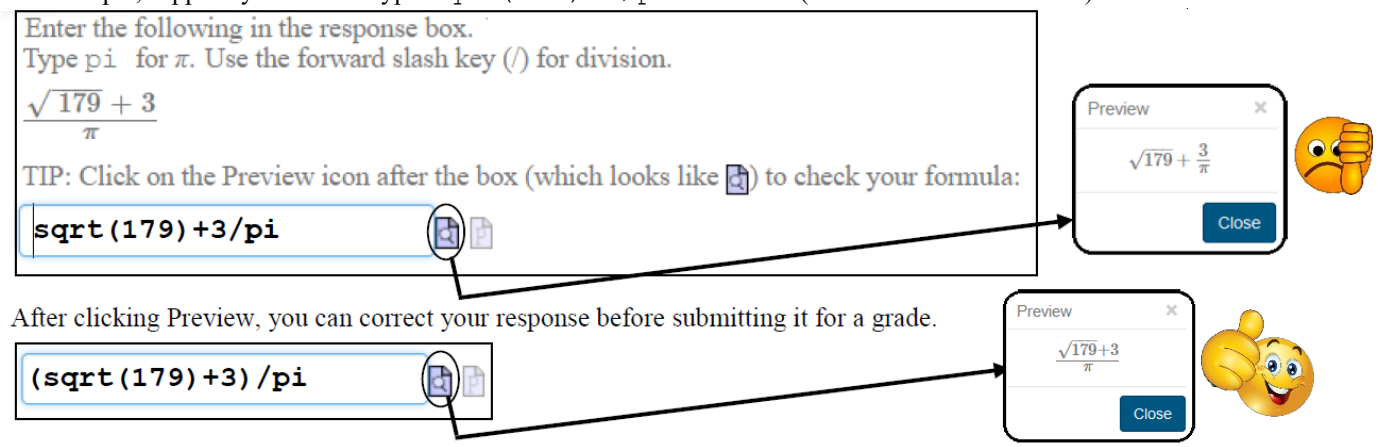
**For MA 15400 students especially:**

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.)




After clicking Preview, you can correct your response before submitting it for a grade.




## ***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:

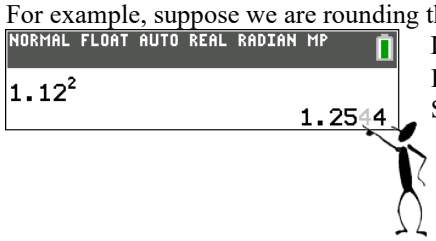
**P**arentheses
**E**xponents
**M**ultiplication and **D**ivision (from left to right)
**A**ddition and **S**ubtraction (from left to right)

TIP: Some students use the mnemonic:
**P**lease
**E**xcuse
**M**y **D**ear
**A**unt **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.

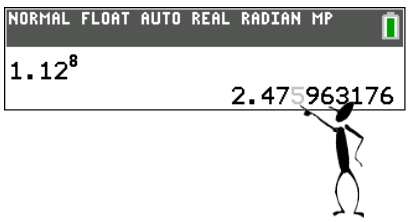
## ***Rules for Rounding***

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

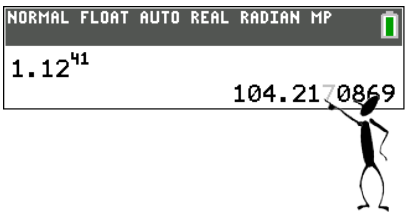



Look to the right of the rounding digit..
If, after the rounding digit, there is a 4 or lower, we truncate.
So $1.12^2$ to two decimal places is $1.12^2 \approx$ **1.25**

If, after the rounding digit, there is a 5 or higher, we round up. So $1.12^8$ to two decimal places is $1.12^8 \approx$ **2.48**



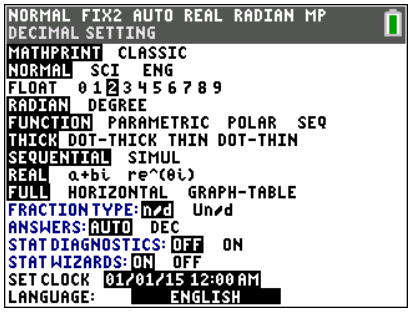

and $1.12^{41}$ to two decimal places is $1.12^{41} \approx$ **104.22**

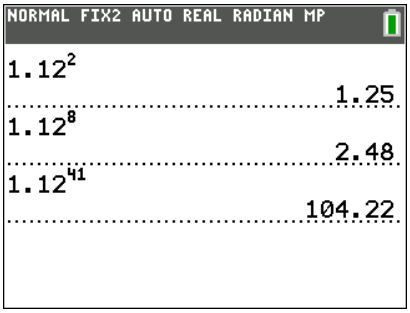


Your calculator mode can be helpful to report answers to a selected number of digits. Press MODE, highlight the number of digits you want to the right of the decimal point, and press ENTER. The position of the decimal point is "fixed". When each of the numbers

1.25
2.48
104.22

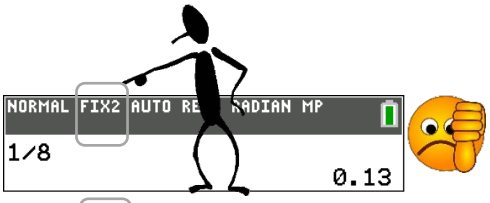
are aligned to the right, the decimal point is fixed in the same position.




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.

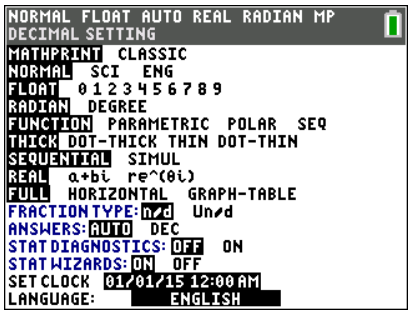
If you want 1/8 reported to full precision and your mode is not set to FLOAT, you could be misled by your calculator! Notice the status bar indicates FIX2 to help you see you have it on this setting.

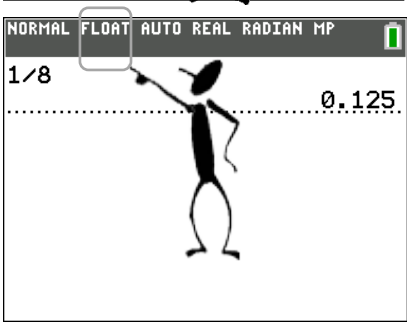



If you press MODE and change it back to FLOAT, you will not have any automatic rounding. position of the decimal point is "fixed". When each of the numbers

0.13
0.125

are aligned to the right, the decimal point is not fixed in the same position. decimal point "floats" wherever it is needed.




## 10. Help!

So you're working your hardest, doing the assignments, studying every night, but it's just not enough? Don't give up. Take a break and come back and try again! Problem solving requires persistence. If you don't understand something the first time, you're in good company. Even Einstein had trouble and said, "Do not worry about your difficulties in Mathematics. I can assure you mine are still greater." Remember, there's no substitute for daily preparation. Get help as soon as any problems arise. Here is a list of resources:

**Resource 1.** Talk to your instructor. Use the office hours.

**Resource 2.** Use the features of eHW, including viewing the details of worked out solutions, the *Just for Practice* homework sets, and eHW *Flash Cards*.

**Resource 3.** Use the supplemental resources in Brightspace. You can find lessons, videos, and interactive figures to help you.

**Resource 4.** If you can, connect with other class members outside of class and do your homework together. A good meeting place is the Math Tutoring Center, KT G19 where there is access to a tutor at no charge. No appointment necessary. See your Brightspace course for the days and times KT G19 is open.

**Resource 5:** Use the Piazza Discussion Board. You can even post anonymously.