



UNIVERSITY of HAWAII®
WINDWARD
COMMUNITY COLLEGE

MATH 103 – COLLEGE ALGEBRA
MATH 88 – COLLEGE ALGEBRA COMPANION
4 Credits, CRN: 61062 & 61217 / 2 Credits, CRN: 61216
MW/F, 5:30 pm – 7:20 pm; 1/11 – 5/14

INSTRUCTOR: David William K.W.L. DONLIN, Lecturer, Mathematics
OFFICE HOURS: MWF, 5:00 pm – 5:30 pm, 7:30 pm – 8:00 pm
EMAIL: donlind@hawaii.edu
EFFECTIVE DATE: Spring 2021

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai'i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide the Ko'olau region of O'ahu and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

CATALOG DESCRIPTION

Math 103

Linear equations, inequalities, systems of equations, polynomials, functions, fractional expressions and equations, exponents, powers, roots, quadratic equations and functions; rational, exponential and logarithmic functions. (4 hours lecture)

Pre-Requisite(s): "C" or better in MATH 25, 26, 29, 82 or equivalent, co-requisite enrollment in MATH 88, satisfactory math placement test score, or consent of instructor.

Math 88

Math 88 provides students with supplemental algebra instruction that directly supports the topics covered in Math 103. (2 Lecture Hours)

Pre-Requisite(s): Satisfactory Placement Score
Co-Requisite(s): MATH 103

STUDENT LEARNING OUTCOMES

Math 103

Upon completion of the course, the student will be able to:

1. Graph or interpret algebraic relations that are relevant to the topics in this course
2. Employ algebraic techniques to find the solutions to equations or inequalities, or systems of equations or inequalities appropriate to the level of this course
3. Use algebraic techniques to analyze and solve applied problems
4. Utilize precise mathematical language and symbols to effectively communicate mathematics in written and/or oral form

Note: All SLO assessments are embedded in class activities, homework, quizzes, or Exams.

Math 88

Upon completion of the course, the student will be able to:

- Demonstrate algebra skills needed to be successful in Math 103

LEARNING RESOURCES

Required Materials:

Connect Math:

- Register online at <https://www.connectmath.com/login> with Course Code: **MNQJM-QEYXE**
 - The access code is included in the textbook bundle at the WCC Bookstore or access may be purchased directly online at <https://www.connectmath.com/login>
 - Comes with the eBook *College Algebra Essentials, 2nd Ed.*, by Julie Miller

Google Classroom:

- Access through your UH Gmail account with Class Code: **egyxmge**

Laulima:

- “College Algebra” tab when logged into Laulima.

Learning Resources:

- Textbook: *Miller, Julie. (2014) College Algebra Essentials, 2nd Edition.*
- Math Lab: La’akea (Library Learning Commons) Room 220: http://windward.hawaii.edu/About_WCC/Math_Lab/index.php
- Testing Center: La’akea (Library Learning Commons) Room 228: http://windward.hawaii.edu/Testing_Center/index.php
- Tutor.com: <https://windward.hawaii.edu/tutor.com/>
- OLA (UH online tutoring program): <http://manoa.hawaii.edu/ola/>
- TRiO: <http://windward.hawaii.edu/TRIO/index.php>
- WCC Produced Tutorial Videos: <https://windward.hawaii.edu/jitmath/>
- Khan Academy Videos: <http://www.khanacademy.org>
- Photomath phone app (<https://www.photomath.net/en/>)
- Google Search – but go to “Images”, reading is dumb

COURSE TASKS AND GRADING

The mode of instruction is primarily discussion-problem solving where the initial portion of each class period may be utilized to discuss and clarify any questions from the preceding class meeting and/or assignment, and the remaining portion is used to discuss new material. Lectures, directed student explorations, group work, appropriate technologies, and projects will also be used as appropriate. After the completion of each unit, a review and exam will be conducted. The student will demonstrate competency in the objectives by participating in and completing all class activities, by completing and turning in all assignments as requested, by taking unit tests, and by taking a final exam over concepts and skill covered in the entire course. Class activities, unit tests, and the final exam are to be taken in the classroom and without any references unless otherwise stipulated by the instructor.

It is the **student's responsibility** to obtain and complete all assignments that are given in any class meeting for which the student is unable to attend. Unless permission is granted by the instructor beforehand, assignments and tests must be completed and submitted to the instructor at the specified date and time.

Points will be assigned to each graded assignment, class activity, and tests as follows:

Chapter R - Connect Math	30 points	
+ 3 Exams (100 Points Each)	+ 300 points	60%
Connect Math	100 points	12.5%
Student Exemplars	96 points	12.5%
Final Exam	120 points	15.0%
Total		100%

Course Grade

A letter grade for the course will be assigned according to the level of achievement as provided in the table below:

<u>Grade</u>	<u>Definition</u>
A	90% – 100% of the cumulative points possible
B	80% – 89% of the cumulative points possible
C	70% – 79% of the cumulative points possible
D	60% – 69% of the cumulative points possible
F	less than 60% of the cumulative points possible.
N	definition listed below
Cr	70% – 100% of the cumulative points possible
NC	less than 70% of the cumulative points possible

Note: CR/NC grades require written instructor consent. Students must apply for CR/NC grading option at the Admissions Office by the posted deadline. If a student does not apply for CR/NC grading option at the Admissions Office by the required deadline and

if s/he does not withdraw, a letter grade (A, B, C, D, F, N) will be assigned for the course.

Note: The W grade is given only when the student officially withdraws from the course by the posted deadline. If a student withdraws from this course they must also withdraw from the companion Math 88 course.

Note: *The I grade is a temporary grade given at the instructor's option when a student has failed to complete a small part of a course because of circumstances beyond his or her control.* A student may qualify for the "I" grade if: (a) they are unable to take the final exam and (b) taking the final exam could possibly raise their course grade. The "I" grade is given by student request and must be approved by the instructor.

Note: The N grade is given at the discretion of the instructor and only when the criteria for the N grade is met by the student. Consult the WCC Catalog for the criteria of the N grade.

Note: Students must apply for the Cr/NC grading option at the Admissions Office. Consult the WCC Catalog for deadlines.

Note: W grade is given only when the student officially withdraws from the course at the Admissions Office. Consult the WCC Catalog for deadlines.

Math 88

This course is designed to supplement Math 103. Grades will be assigned as follows:

Grade	Definition
CR	70% or higher of the cumulative points possible in Math 103
NC	Less than 70% of the cumulative points possible in Math 103
W	Official Withdrawal

Note: The W grade is given only when the student officially withdraws from the course by the posted deadline. If a student withdraws from this course they must also withdraw from the companion Math 103 course.

Absences

If you are absent you are responsible for any important announcements or assignments given during the class you missed. Advanced warning of absences are appreciated, but not required; however, it does help me to help you if you keep me posted. You can also arrange to meet with me during office hours to review any missed lecture material.

Calculators

No calculators are allowed on exams. A calculator may be used on homework as needed.

Exams

There are no retests or make-ups for exams. The final exam is cumulative. If you are unable to attend class on an exam day, it may be possible for you to take the exam earlier than the specified day/time. You must contact the instructor ahead of time to arrange this.

If the percent earned on the final exam is higher than your lowest exam score, then your lowest exam score will be replaced with the percent earned on the final exam.

Homework

Homework will be completed online via the Connect Math program. Keep in mind that homework is not simply a task to be completed but an opportunity to practice at your own pace. You may need to do more than the assigned homework problems to become comfortable with the concepts and skills; you may have to repeat problems to make sure you understand.

Student Exemplars

For every section we cover you will select any one of the problems from the Connect Math homework set in that section for at most 3 points per problem. These solutions will be posted on Lulima, details on this particular assignment will be posted there as well.

In-Class Activities

In-class worksheets will be turned in for credit. These activities are considered class participation points. You may not make up in-class activities.

Grading

To receive full credit for problems done on exams and in-class activities, you must show sufficient work in a clear and organized manner to display your understanding of the content. Messy and/or disorganized work will not receive full credit.

Cell Phones & Other Devices

Cell phones and other electronic devices should be silenced prior to the start of class.

Disruptive Behavior & Academic Honesty

Do not be disruptive. Please respect your fellow students and act accordingly.

All exams must be done by your own individual effort. You may not consult with any classmates while taking exams. This would fall under the guidelines of academic integrity and any evidence of cheating will result in a score of 0 for all parties involved. An "F" will be assigned to students involved in cheating and will be reported to the Dean. See <http://windward.hawaii.edu/Policies/> for more information on the UH system-wide student conduct code.

ADDITIONAL INFORMATION

Skills or Competencies/Responsibilities of Students

Success in this course will be enhanced by:

1. a positive, inquiring attitude towards learning mathematics;
2. setting aside adequate time for studying and working of problems;
3. reading the text carefully and making use of other learning materials whenever necessary;
4. seeking assistance from the instructor and the Math Lab personnel whenever necessary;

5. completing assignments by the designated date;
6. regular class attendance, participation and maintaining accurate class notes.

Past students who have successfully completed this class leave the following advice for new students:

- Try your best not to miss class, or else you will be lost!
- Be ready to pay attention and learn.
- Ask questions.
- Come early to class and ask questions one on one.
- Don't be afraid to ask questions.
- Don't be afraid to ask stupid questions, they aren't stupid questions if they help you learn.
- Ask the stupid questions! The other students won't laugh. Do the homework, you're going to need it on your tests.
- Do the homework to get the best preparation for the tests and understand the concepts.
- Pace yourself with the homework.
- Stay caught up with the homework.
- Do the fricken homework, or else you won't be ready for the test!
- Stay on track with the syllabus and complete what is due every week.
- Do not procrastinate and stay caught up on the homework, because once you're behind it's really hard to catch back up.
- Stay on a rigorous schedule and keep up with assignments. I would also advise that you seek out a tutor before the semester begins and to go over notes with a tutor weekly. Ask for assistance, keep the instructor in the loop, and keep an open line of communication.
- Don't take this course lightly! Make this your priority! GET YOUR TUTOR ASAP! Go to TRIO go to the math lab! Mr. Donlin is super accommodating and easy to work with BUT YOU STILL HAVE TO KNOW THE CONTENT! If you think you gonna just half @\$@ it DON'T BOTHER WASTING YOUR TIME OR MONEY/SCHOLARSHIP!!! Be ready to put in work!!!

FOUNDATIONS SYMBOLIC REASONING HALLMARKS

Math 103 fulfills 3 credits of the General Education requirements (Foundations: Symbolic) for both an A.A. degree at WCC and a Bachelor's degree at 4 year UH institutions. Consequently, it meets the following hallmarks:

1. Students will be exposed to the beauty, power, clarity and precision of formal systems.
2. Instructors will help students understand the concept of proof as a chain of inferences.
3. Instructors will teach students how to apply formal rules or algorithms.
4. Students will be required to use appropriate symbolic techniques in the context of problem solving, and in the presentation and critical evaluation of evidence.
5. The course will include computational and/or quantitative skills.
6. Instructors will build a bridge from theory to practice and show students how to traverse this bridge.

FOUNDATIONS QUANTITATIVE REASONING HALLMARKS

Math 103 fulfills 3 credits of the General Education requirements (Foundations: Quantitative) for both an A.A. degree at WCC and a Bachelor's degree at 4 year UH institutions. Consequently, it meets the following hallmarks:

1. Provide students with theoretical justifications for, and limitations of, mathematical or statistical methods, and the formulas, tools, or approaches used in the course.
2. Include application of abstract or theoretical ideas and information to the solution of practical quantitative reasoning problems arising in pure and applied research in specific disciplines, professional settings, and/or daily and civic life.
3. Provide opportunities for practice and feedback that are designed to help students evaluate and improve quantitative reasoning skills by including a course component at least once per week with a maximum 30:1 student-to-teacher ratio.
4. Be designed so that student will be able to
 - a. identify and convert relevant quantitative information into various forms such as equations, graphs, diagrams, tables, and/or words.
 - b. select appropriate techniques or formulas, and articulate and evaluate assumptions of the selected approaches.
 - c. apply mathematical tools and perform calculations (including correct manipulation of formulas).
 - d. make judgments, create logical arguments, and/or draw appropriate conclusions based on the quantitative analysis of data, the assumptions made, the limitations of the analysis, and/or the reasonableness of results.
 - e. effectively communicate those results in a variety of formats.

DISABILITIES ACCOMMODATIONS

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Roy Inouye can be reached at royinouy@hawaii.edu, or you may stop by TRiO in Hale Kāko‘o for more information.

TITLE IX

Title IX prohibits discrimination on the basis of sex in education programs and activities that receive federal financial assistance. Specifically, Title IX prohibits sex discrimination; sexual harassment and gender-based harassment, including harassment based on actual or perceived sex, gender, sexual orientation, gender identity, or gender expression; sexual assault; sexual exploitation; domestic violence; dating violence; and stalking. For more information regarding your rights under Title IX, please visit: https://windward.hawaii.edu/Title_IX/.

Windward Community College is committed to the pursuit of equal education. If you or someone you know has experienced sex discrimination or gender-based violence, Windward CC has resources to support you. To speak with someone confidentially, contact Karla Silva-Park, Mental Health Counselor, at 808-235- 7468 or karlas@hawaii.edu or Kaahu Alo, Designated Confidential Advocate for Students, at 808-235- 7354 or kaahualo@hawaii.edu. To make a formal report, contact the Title IX Coordinator at 808-235-7393 or wctix@hawaii.edu.

Windward Community College is an equal opportunity, affirmative action institution.

ALTERNATE CONTACT INFORMATION

If you are unable to contact the instructor, have questions that your instructor cannot answer, or for any other issues, please contact the Academic Affairs Office:

Location: Alakai 121
 Phone: 808-235-7422
 Email: wccaa@hawaii.edu

TENTATIVE SCHEDULE

DONLIN – Spring 2021; MW/F 5:30 – 7:20 PM (CRN: 61062, 61217/61216)

Academic Calendar: <http://windward.hawaii.edu/academics/Calendar/>

January 19 – Last Day to Add/Late Register, Last Day for 100% Refund

February 3 – Last Day for 50% Refund, Last Day to Withdraw *without* a “W” Grade

March 29 – Last Day to Establish C/NC and Audit Options, Last Day to Withdraw *with* a “W”

Date	Class	Homework Pacing Guide
1/11	Syllabus, R.1 – Sets & the Real Number Line	Homework Sections to complete for this week: R.1, R.2, R.3
1/13	R.2 – Integer Exponents & Scientific Notation R.3 – Rational Exponents	
1/15		
1/18	<i>Dr. Martin Luther King Jr. Day (No Classes)</i>	Homework Sections to complete for this week: R.4
1/20	R.4 – Polynomials & Multiplication of Radicals	
1/22		
1/25	R.5 – Factoring	Homework Sections to complete for this week: R.5, R.6
1/27	R.6 – Rational Expressions & More Operations on Radicals	
1/29		
2/1	1.1 – Linear Equations & Rational Equations 1.2 – Applications & Modeling with Linear Equations	Homework Sections to complete for this week: 1.1, 1.2, 1.3, 1.4
2/3	1.3 – Complex Numbers 1.4 – Quadratic Equations	
2/5		

2/8	1.5 – Applications of Quadratic Equations	Homework Sections to complete for this week: 1.5, 1.6
2/10	1.6 – More Equations & Applications	
2/12		
2/15	<i>President's Day (No Classes)</i>	Homework Sections to complete for this week: 1.7
2/17	1.7 – Linear, Compound, & Absolute Value Inequalities	
2/19		
2/22	Exam 1 Review	Schedule to take your exam by Friday, 2/26 @ 2:30 pm
2/24	Exam 1 – Chapter 1	
2/26		
3/1	2.1 – The Rectangular Coordinate System & Graphing Utilities 2.2 – Circles	Homework Sections to complete for this week: 2.1, 2.2, 2.3, 2.8
3/3	2.3 – Functions & Relations 2.8 – Algebra of Functions & Function Composition	
3/5		
3/8	2.4 – Linear Equation in Two Variables & Linear Functions 2.5 – Applications of Linear Equations & Modeling	Homework Sections to complete for this week: 2.5, 2.8, 3.1, 3.3
3/10	3.1 – Quadratic Functions & Applications 3.3 – Division of Polynomials & the Remainder & Factor Theorems	
3/12		
3/15	<i>Spring Break (No Classes)</i>	Use this time to finish up missed assignments and get a head start on future assignments.
3/17	<i>Spring Break (No Classes)</i>	
3/19	<i>Spring Break (No Classes)</i>	
3/22	3.5 – Rational Functions	Homework Sections to complete for this

3/24	3.6 – Polynomial & Rational Inequalities 3.7 – Variation	week: 3.5, 3.6, 3.7
3/26		
3/29	Exam 2 Review	Schedule to take your exam by Friday, 4/2 @ 2:30 pm
3/31	Exam 2 – Chapter 2 & 3	
4/2		
4/5	4.2 – Exponential Functions 4.3 – Logarithmic Functions	Homework Sections to complete for this week: 4.2, 4.3, 4.4, 4.5
4/7	4.4 – Properties of Logarithms 4.5 – Exponential & Logarithmic Equations	
4/9		
4/12	5.1 – System of Linear Equations in Two Variables & Applications	Homework Sections to complete for this week: 5.1, 5.2
4/14	5.2 – System of Linear Equations in Three Variables & Applications	
4/16		
4/19	5.4 – System of Nonlinear Equations in Two Variables	Homework Sections to complete for this week: 5.4, 5.5
4/21	5.5 – Inequalities & Systems of Inequalities in Two Variables	
4/23		
4/26	Exam 3 Review	Schedule to take your exam by Friday, 4/30 @ 2:30 pm
4/28	Exam 3 – Chapter 4 & 5	
4/30		
5/3	Final Exam Review	Use this time to finish up missed assignments.
5/5	Final Exam Review	

5/7	No Class (Last Day of Instruction 5/5)	
5/10	No Class (Final Exams Week)	Schedule to take your exam by the end of Friday.
5/12	Final Exam*: 5:30 pm – 7:30 pm	

COMPLETE COURSE CONTENT

Chapter R

R.1 – Sets & the Real Number Line

- OB.1 – Identify Subsets of the Set of Real Numbers*
- OB.2 – Use Inequality Symbols & Interval Notation
- OB.3 – Evaluate Absolute Value Expressions
- OB.4 – Use Absolute Value to Represent Distance
- OB.5 – Evaluate Exponential Expressions, Square Roots, & Cube Roots
- OB.6 – Apply the Order of Operations
- OB.7 – Simplify Algebraic Expressions
- OB.8 – Write Algebraic Models

R.2 – Integer Exponents & Scientific Notation

- OB.1 – Simplify Expressions with Zero & Negative Exponents
- OB.2 – Apply Properties of Exponents
- OB.3 – Apply Scientific Notation

R.3 – Rational Exponents & Radicals

- OB.1 – Evaluate n th-Roots
- OB.2 – Simplify Expressions of the Forms $a^{1/n}$ & $a^{m/n}$
- OB.3 – Simplify Expressions with Rational Exponents
- OB.4 – Simplify Radicals
- OB.5 – Multiply Single-Term Radical Expressions
- OB.6 – Add and Subtract Radicals

R.4 – Polynomials & Multiplication of Radicals

- OB.1 – Identify Key Elements of a Polynomial
- OB.2 – Add & Subtract Polynomials
- OB.3 – Multiply Polynomials
- OB.4 – Identify & Simplify Special Case Products
- OB.5 – Multiply Radical Expressions Involving Multiple Terms

R.5 – Factoring

- OB.1 – Factor Out the Greatest Common Factor
- OB.2 – Factor by Grouping
- OB.3 – Factor Quadratic Trinomials
- OB.4 – Factor Binomials
- OB.5 – Apply a General Strategy to Factor Polynomials
- ~~OB.6 – Factor Expressions Containing Negative & Rational Exponents~~

R.6 – Rational Expressions & More Operations on Radicals

- OB.1 – Determine Restricted Values for a Rational Expression
- OB.2 – Simplify Rational Expressions
- OB.3 – Multiply & Divide Rational Expressions
- OB.4 – Add & Subtract Rational Expressions
- OB.5 – Simplify Complex Fractions
- OB.6 – Rationalize the Denominator of a Radical Expression

Chapter 1**1.1 – Linear Equations & Rational Equations**

- OB.1 – Solve Linear Equations in One Variable
- OB.2 – Identify Conditional Equations, Identities, & Contradictions
- OB.3 – Solve Rational Equations
- OB.4 – Solve Linear Equations for a Specified Variable

1.2 – Applications & Modeling with Linear Equations

- ~~OB.1 – Solve Applications Involving Simple Interest~~
- ~~OB.2 – Solve Applications Involving Mixtures~~
- OB.3 – Solve Applications Involving Uniform Motion
- OB.4 – Solve Applications Involving Rate of Work Done
- OB.5 – Solve Applications Involving Proportions

1.3 – Complex Numbers

- OB.1 – Simplify Imaginary Numbers
- OB.2 – Write Complex Numbers in the form $a + bi$
- ~~OB.3 – Perform Operations on Complex Numbers~~

1.4 – Quadratic Equations

- OB.1 – Solve Quadratic Equations Using the Zero Product Property
- OB.2 – Solve Quadratic Equations Using the Square Root Property
- ~~OB.3 – Complete the Square~~
- OB.4 – Solve Quadratic Equations by Using the Quadratic Formula
- ~~OB.5 – Use the Discriminant*~~
- OB.6 – Solve and Equation for a Specified Variable

1.5 – Applications of Quadratic Equations

- OB.1 – Solve Applications Involving Quadratic Equations & Geometry
- OB.2 – Solve Applications Involving Quadratic Models

1.6 – More Equations & Applications

- OB.1 – Solve Polynomial Equations
- OB.2 – Solve Rational Equations
- OB.3 – Solve Absolute Value Equations
- OB.4 – Solve Radical Equations & Equations with Rational Exponents
- OB.5 – Solve Equations in Quadratic Form

1.7 – Linear, Compound, & Absolute Value Inequalities

- OB.1 – Solve Linear Inequalities in One Variable
- OB.2 – Solve Compound Linear Inequalities
- OB.3 – Solve Absolute Value Inequalities
- OB.4 – Solve Applications of Inequalities

Chapter 2

2.1 – The Rectangular Coordinate System & Graphing Utilities

OB.1 – Plot Points on a Rectangular Coordinate System

OB.2 – Use the Distance & Midpoint Formulas

OB.3 – Graph Equations by Plotting Points

OB.4 – Identify x - & y -Intercepts

~~OB.5 – Graphing Equations Using a Graphing Utility~~

2.2 – Circles (excluding degenerate cases)

OB.1 – Write an Equation of a Circle in Standard Form

OB.2 – Write the General Form of an Equation of a Circle

2.3 – Functions & Relations

OB.1 – Determine Whether a Relation is a Function

OB.2 – Apply Function Notation

OB.3 – Determine x - & y -Intercepts of a Function Defined by $y = f(x)$

OB.4 – Determine Domain & Range of a Function

OB.5 – Interpret a Function Graphically

2.4 – Linear Equation In Two Variables & Linear Functions

OB.1 – Graph Linear Equations in Two Variables

OB.2 – Determine the Slope of a Line

OB.3 – Apply the Slope-Intercept Form of a Line

OB.4 – Compute Average Rate of Change

~~OB.5 – Solve Equations & Inequalities Graphically~~

2.5 – Applications of Linear Equations & Modeling

OB.1 – Apply the Point-Slope Formulas

OB.2 – Determine the Slopes of Parallel & Perpendicular Lines

OB.3 – Create Linear Functions to Model Data

~~OB.4 – Create Models Using Linear Regression~~

2.8 – Algebra of Functions & Function Composition

OB.1 – Perform Operations on Functions

OB.2 – Evaluate a Difference Quotient

OB.3 – Compose & Decompose Functions (excluding finding the domains & decomposing into two functions)

Chapter 3

3.1 – Quadratic Functions & Applications

~~OB.1 – Graph a Quadratic Function Written in Vertex Form~~

~~OB.2 – Write $f(x) = ax^2 + bx + c$ ($a \neq 0$) in Vertex Form~~

~~OB.3 – Find the Vertex of a Parabola by Using the Vertex Formula~~

OB.4 – Solve Applications Involving Quadratic Functions

~~OB.5 – Create Quadratic Models Using Regression*~~

~~3.2 – Introduction to Polynomial Functions~~

3.3 – Division of Polynomials & the Remainder & Factor Theorems

OB.1 – Divide Polynomials Using Long Division

~~OB.2 – Divide Polynomials Using Synthetic Division~~

~~OB.3 – Apply Remainder & Factor Theorems~~

~~3.4 – Zero Polynomials~~

3.5 – Rational Functions (consult Coverage notes)

- ~~OB.1 – Apply Notation Describing Infinite Behavior of a Function~~
- OB.2 – Identify Vertical Asymptotes
- OB.3 – Identify Horizontal Asymptotes (use long division & ignore the remainder)
- ~~OB.4 – Identify Slant Asymptotes~~
- OB.5 – Graph Rational Functions
- ~~OB.6 – Use Rational Functions in Applications~~

3.6 – Polynomial & Rational Inequalities

- OB.1 – Solve Polynomial Inequalities
- OB.2 – Solve Rational Inequalities
- ~~OB.3 – Solve Applications Involving Polynomial & Rational Inequalities*~~

3.7 – Variation

- OB.1 – Write Models Involving Direct, Inverse, & Joint Variation
- OB.2 – Solve Applications Involving Variation

Chapter 4**4.1 – Inverse Functions****4.2 – Exponential Functions**

- OB.1 – Graph Exponential Functions (using a Table of Values)
- OB.2 – Evaluate the Exponential Function Base e
- ~~OB.3 – Use Exponential Functions to Compute Compound Interest~~
- ~~OB.4 – Use Exponential Functions in Applications~~

4.3 – Logarithmic Functions (consult Coverage notes)

- OB.1 – Convert Between Logarithmic & Exponential Forms
- OB.2 – Evaluate Logarithmic Expressions
- OB.3 – Apply Basic Properties of Logarithms
- OB.4 – Graph Logarithmic Functions
- ~~OB.5 – Use of Logarithmic Functions~~

4.4 – Properties of Logarithms

- OB.1 – Apply the Product, Quotient, & Power Properties of Logarithms
- OB.2 – Write a Logarithmic Expression in Expanded Form
- OB.3 – Write a Logarithmic Expression as a Single Logarithm
- ~~OB.4 – Apply the Change-of-Base Formula~~

4.5 – Exponential & Logarithmic Equations

- OB.1 – Solve Exponential Equations
- OB.2 – Solve Logarithmic Equations
- ~~OB.3 – Use Exponential & Logarithmic Equations in Applications~~

4.6 – Modeling with Exponential & Logarithmic Functions**Chapter 5****5.1 – Systems of Linear Equations in Two Variables & Applications**

- OB.1 – Identify Solutions to Systems of Linear Equations in Two Variables
- OB.2 – Solve Systems of Linear Equations in Two Variables
- OB.3 – Use Systems of Linear Equations in Applications

5.2 – Systems of Linear Equations in Three Variables & Applications

OB.1 – Identify Solutions to a System of Linear Equations in Three Variables

OB.2 – Solve Systems of Linear Equations in Three Variables

OB.3 – Use System of Linear Equations in Applications

OB.4 – Modeling with Linear Equations in Three Variables

~~5.3 – Partial Fraction Decomposition~~**5.4 – Systems of Nonlinear Equations in Two Variables**

OB.1 – Solve Nonlinear Systems of Equations by the Substitution Method

OB.2 – Solve Nonlinear Systems of Equations by the Addition Method

OB.3 – Use Nonlinear Systems of Equations to Solve Applications

5.5 – Inequalities & Systems of Inequalities in Two Variables

OB.1 – Solve Linear Inequalities in Two Variables

OB.2 – Solve Nonlinear Inequalities in Two Variables

OB.3 – Solve Systems of Inequalities in Two Variables

~~5.6 – Linear Programming~~

FINAL WORDS FROM THE INSTRUCTOR

“I didn’t get there by wishing for it or hoping for it, but by working for it.”

– Estée Lauder

Math is a difficult subject for many people because of the way the content stacks upon itself. For example, I cannot raise a number to a given exponent if I don't know how to multiply, I cannot multiply numbers if I don't know how to add them, and I cannot add if I don't know how to count. Every skill in math sits on a step, below that step are all the stairs of things previously learned to reach that step while above that step are the things yet to learn. Unfortunately, just like in real life, walking the stairs kinda sucks; most people would rather take the escalator or ride the elevator or, if you're like me, it would be awesome if there were someone there to just wheel you around while you sat in a comfy chair. But again, just like in real life, you'll be forced to take the stairs because machines break down and as my mother tells me, "no one is pushing your lazy ass around." Mother's love aside, I previously mentioned that math is a learned skill and as a learned skill it has much in common with playing just about any sport. Take the "Big Game" for example. How does one prepare for this event? I would assume that there would be weeks, if not months, of conditioning, training, and strategizing to maximize performance and provide the best opportunity to "take the win" as the saying goes (I'm assuming all this because I've never played "the sports" myself, I was an indoor recess kind of kid). So tying this back to math, students in a math class can expect to practice their math skills outside of class, i.e. homework. Unfortunately, the term “homework” comes with a number of negative connotations learned from way back in grade school when a task was assigned by the teacher and your primary goal was to complete such a task so you could be done with it all because you felt that you had better things to do with your time. Learning does not simply materialize from completing one task after another; rather the labor of the task is meant to hone your senses in a particular fashion and makes you stronger for having done the work. You have chosen an academic path that will push you to determine what it means for you to be successful. You need to determine how much time to put into your course work, honestly figure out when you need to practice more or have had enough, and, most importantly, when to reach out for help. Thus, into the scene, enters me, your instructor. Consider me to be the Yoda to your Luke Skywalker, the Mr. Miyagi to your Daniel-san. During class there is a great deal of content to cover and I can help set you up and show you the basics of how to approach each problem, but your understanding will be developed and solidified as you practice on your own, exercise your force powers, wax-on/wax-off, take the stairs if you will. I believe that just about anyone can learn the math I teach, but I also recognize the struggle of learning everything in only 15 weeks while also balancing work, family, and all manner of other responsibilities; this is the truly challenging part for most students. However, walking away with a win doesn't always come easy, just ask Luke Skywalker and Daniel-san, you can find them taking the stairs.

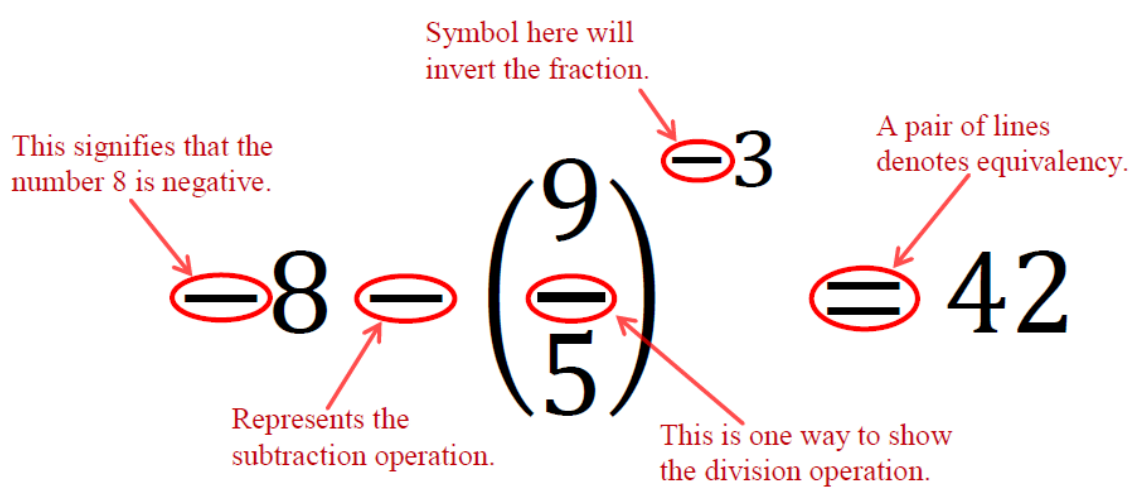
For my first wax on/wax off moment, I want you to keep two things in mind, as far as math is concerned, that are illustrated in the two pictures on the following pages:

1. The language and symbology of mathematics is exact. This is not an art class, and the positioning of numbers, letters, and the lines between them all have a purpose.
2. Much of the solution to a math problem is implied by the smallest of details and it will be up to you to bring the knowledge needed to solve these problems. This is very much unlike, for instance, an essay question, where you can sometimes extract part of your answer from the question or the way it is framed.

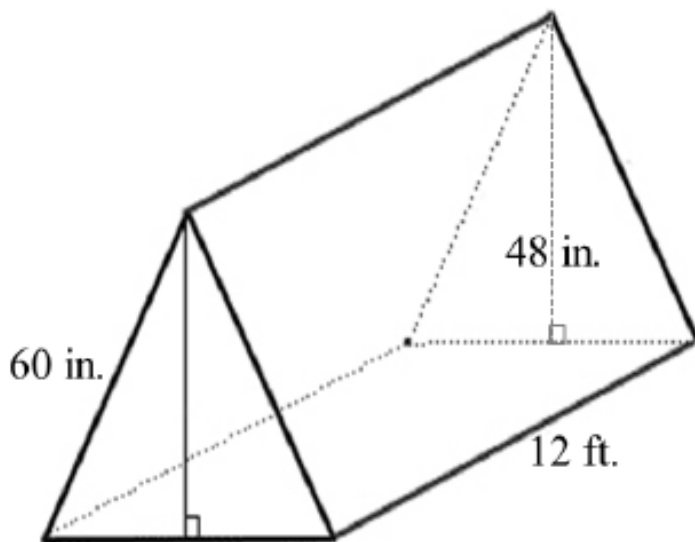
“ _ ”

What does this symbol represent?

$$-8 - \left(\frac{9}{5}\right)^{-3} = 42$$



How do you solve the following problem?



Find the Volume of the Prism.

$$V = Bh$$

There is a Right Triangle here and Pythagorean Theorem can be applied.

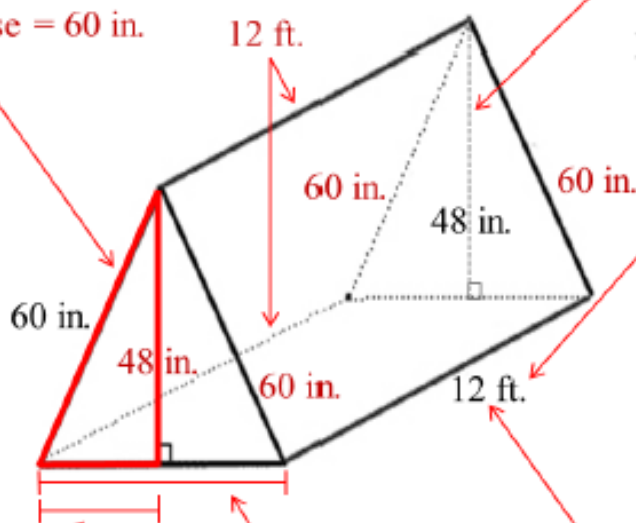
Leg 1 = 48 in.

Leg 2 = unknown

Hypotenuse = 60 in.

Height of the Triangle, but not Height of the Prism.

Prism is a Triangular Prism and the Base of the Prism is a Triangle.



Find the Volume of the Prism.

h = Height of the Prism (this is different from the Height of the Triangle)

$$V = Bh$$

B = the Area of the Base (The Base is a Triangle, so the Area Formula for a Triangle is needed: $A = \frac{bh}{2}$ where ' b ' is the Base of the Triangle and ' h ' is the Height of the Triangle.)

This is the Length of the Base of the Triangle and is needed to calculate the Area of the Base of the Prism.

Units here are in 'feet' but other measurements are in 'inches'. All measurements need to be converted to the same Units of Measure, either feet or inches.

Pythagorean Theorem ($a^2 + b^2 = c^2$, solve for ' a ' or ' b ') must be used to find this length, then multiply that value by 2 in order to find the Length of the Base of the Triangle.