OVERVIEW OF INTERMEDIATE ALGEBRA

This course is a STEM course so the intent is to prepare you for Calculus and beyond where you will need to be VERY adept at these skills. The biggest source of error for Calculus students usually has to do with their foundation and prerequisite skills.

In this class, the goal is to begin to learn how to use algebra as a tool to solve important "real world" problems. Faced with a mathematical problem, we need to learn to translate the problem into algebraic and numeric symbols (Mathematical Modeling), manipulate those symbols (Simplify Expressions), Solve Equations, and interpret results (Analysis) and report those results (Presentation). This class focuses on mastering those fundamentals. The more we have mastered these skills, the more interesting and realistic the problems become.

You have had experience in all these areas. For example:

Solve this "real world" problem: If USA scores one less goal than twice Brazil and their combined score is 8, what was the score of the game?

Modeling: Let B represent Brazil's score. Then USA's score is represented by 2B-1.

The combined score is 8 so USA's score + Brazil's score totals 8. That is: 2B-1+B=8

Simplifying: Combine like terms: 3B-1=8

Solve the equation: B=3

Analysis: This tells us that Brazil scored 3 goals. Since 2B-1 =2(3)-1=5, we know that USA scored 5 goals.

Presentation: The work shown above carefully presents the thought process and rationale use in our solution and it is a very important part of the solution in the "real world".

Perhaps not the most interesting example, but we need to get stronger skills to do more interesting problems. (Consider this problem) That's the goal. We will take what you have already learned and expand upon it. Much of the material in this course is similar to Beginning Algebra, but with more complex problems; some is brand new. We will go through the similar material quickly to focus on the new. Therefore, if your Beginning Algebra skills are weak, this course will be more difficult for you.

Basic skills from arithmetic and beginning algebra that you MUST be proficient at before we start:

Arithmetic: Operations with positive and negative numbers, especially fractions.

Algebra: Equations in one variable, factoring, rules of exponents, graphing lines etc.

ONE VARIABLE VS TWO

You may have not thought of beginning algebra from this point of view, but much of what you studied fell into the category of one variable or two.

	One	Two
Simplify *Expression*:	2x-3(x+4)	y-3x+2(x+y)
Solve *Equation*:	2x-3(x+4)=3	y-3x+2(x+y)=6
Graph solution:		
Solve Inequality:	2x-3(x+4)<3	y-3x+2(x+y)≥6
Graph Solution:		
Solve System:	----	$\begin{cases} x+y=3 \\ 2x-y=0 \end{cases}$

Again in this course, we will be doing both, though moving more towards the two variable case. We often will be switching back and forth so it is helpful to see the big picture. We will even venture into three variables. What do you thing that will might mean?