Course Title: Algebra 2

Semester: Fall 2016

Dates and Times: Monday through Friday 8:30 A.M. – 9:50 A.M.

or 10:00 A.M. – 11:20 A.M.

Location: Les Morford Instruction Building M208

Instructor: Tricia Yonker

Contact: email – tricia.yonker@montcalm.edu

phone – 989.328.2111 x 307

Office Hours: Monday through Friday 7:45 A.M. to 8:15 A.M.

and 3:45 P.M. to 4 P.M.

Others by appointment

Description

To prepare high school juniors to succeed in college level mathematics courses by reviewing and building on prior knowledge. We will be focusing on the following overarching topics: fractions, word problems, linear equations and inequalities, systems of equations, functions (linear, polynomial, quadratic, exponential & logarithmic), and sequences & series (arithmetic and geometric). The following mathematic soft skills will be modeled and growth in each is expected.

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| **Mathematical Practices** |
| 1. Make sense of problems, and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments, and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for, and make use of, structure. 8. Look for, and express regularity in, repeated reasoning. |

Textbook(s)/Materials

Textbook: Student Edition of Algebra 2, Common Core Edition, Burger, Holt McDougal

In-class activities and handouts

TI-84 supplied by the Early College

Graph Paper

Ruler

Three-ring binder and dividers

One-subject notebook

Process of Evaluation

1. Binder: A three-ring binder must be kept containing the following labeled dividers:

Course Documents will be kept in the front of your binder, ahead of your “Notes” divider.

* 1. Notes – This is where you will keep your one-subject notebook and handouts you are given.
  2. Practice – this is where you will keep homework and classwork
  3. Products – this is where you will keep tests and quizzes

Binders will be assessed randomly with 20 points possible.

1. Notes: Notes must be kept in chronological order (oldest in the front, newest in the back) with a table of contents at the front of your notebook. I suggest highlighting, underlining, color-coding, and/or the use of tabs to increase your ability to make the most of your notes.

1. Homework assignments: Homework will be assigned after each class to practice and become comfortable with the content and processes taught in class. All homework assignments will be completed according to the following guidelines:

* All assignments must be written in **pencil** on lined paper with **all** work shown.
* Name, class, and date are placed in the **upper right corner** of your paper.
* The assignment is written **above the first line** of your paper.
* Answers must be **boxed** or **circled**.
* When asked to give an explanation, use **complete sentences**.
* All **graphs** must be done on **graph paper**, whether the directions say “graph”, “sketch”, “draw”, etc. Label the axes and the interval.
* **Instructor directions override text directions.**

Homework will be collected daily and graded randomly.

It is imperative that you keep up with the homework! You will be discussing homework as a class and in groups at the beginning of each class.

1. Quizzes: Quizzes will be given occasionally as either formative or summative assessments. Advance notice may or may not be given.
2. Tests: Tests will be given to assess understanding of a complete unit, each worth 100 points. An advance notice of one week will be given for student preparation.
3. Final Exam: A comprehensive final exam will be given at the end of the course, worth 200 points.
4. Final grade: The points will be totaled and the mean computed. The final grade will be based on the following scale:

A 94% - 100% C 74% - 76%

A- 90% - 93% C- 70% - 73%

B+ 87% - 89% D+ 67% - 69%

B 84% - 86% D 64% - 66%

B- 80% - 83% D- 60% - 63%

C+ 77% - 79% F below 60%

Other Pertinent Information

**Make-up tests** will **only** be given in case of serious illness or emergency. The instructor **must** be notified by e-mail and the make-up scheduled **before** (not at the time of) the next class.

**Test retakes** will be given **only** at the teacher’s discretion.

**No late homework.** If homework is not done a zero is earned and no resubmissions are allowed. All homework will be collected and randomly graded.

**Resubmissions of homework** must be completed within two class periods of the work being returned to the student. For example, an assignment that was returned to students on August 31 must be resubmitted by September 2.

**Cheating** in any form will not be tolerated.

**Electronics** (cell phones, mp3 players, tablets, etc) must be turned off during class time. **Absolutely no texting during class will be allowed**. Computers are only allowed if they are being used appropriately during class.

A variety of instructional methods are used to provide students with effective learning opportunities. These include group discussions and group problem solving, guided inquiry activities, visual aids, and instructor directed learning. Achieving success will **require a time commitment outside of class**. It is important to **keep up** with class work, **seek additional help** when and if necessary before you are too far behind, **actively participate** in class, asking questions, and working effectively with your fellow **classmates**. My goal is to help each and every one of you be successful, but you have to work to achieve that goal. Setting priorities for class is the first thing you should do to be successful.

**Professional standards** should be displayed at all times to create an atmosphere similar to that present in the most professional businesses. Therefore, eliminate learning distractions such as **arriving late**, **private conversations**, personal communication devices, door slamming, or loud conduct in the hall. Respect for others’ opinions should be demonstrated at all times. Every student has the right to listen and learn. A positive learning environment must be maintained at all times.

Course Philosophy

This course is designed to help students adapt to changing circumstances – to become lifelong learners who experience mathematics as a way of knowing and thinking, along with growth in the understanding of mathematics and improved competence in using mathematics. The primary objective is to build or build upon the intellectual and academic abilities necessary to analyze, understand, and synthesize the course content.

**Course Format**:

Studying mathematics is much more than covering a list of concepts or skills. It is an exploration into quantitative methods and how they are useful in life experiences. This course will actively strive to build a community of learners with a commitment to understanding and intellectual growth. In the community of learners our differences are respected and our similarities are celebrated. The community of learners happens through teamwork focusing on the day-to-day challenges of reading, writing, conversation, and the social construction of knowledge. Class time will include the following activities:

* Class work: Student centered activities designed to promote active involvement with the course material. These activities will occur in small groups.
* Whole-class discussions: Instructor- or student-led discussions of course concepts or problems.
* In-class assessments: individual or group problem sessions designed to assess student understanding of the material.

**Study Groups**:

You will do much of the work for this course in cooperative learning groups. There will be three to four students in each group. You should work with your group both inside and outside class. Working well in a group is an important skill that is essential for many jobs for which students apply. The objective of group work in this course is two-fold:

* To give you moral and intellectual support while you are working on concepts and problems
* To develop skills in working effectively as part of a team.

One of the primary objectives of this course is to help you learn to think about and solve real-world problems using the tools of mathematics. Working in your group, doing investigation activities, and talking about problems with your group members are all strategies to help you do this.

**Attitudinal Goals**:

* Approach the mathematics in this course actively by immersing yourself in the ideas, exploring the connections and limitations of those ideas, and making sense of the mathematics.
* Be willing to risk making mistakes and realize that learning from mistakes is an essential part of what learning is all about.
* Take personal responsibility for learning (THINK! Try every problem, be open-minded, attend and be on time for class, use the study resources available, use your time-management schedule, get your work done on time)
* Respect the ideas of others (consider multiple ways of tackling problems).
* Develop increased confidence in your ability to be an independent learner.
* Work effectively in a team.
* Understand that writing is a method for showing your understanding of mathematics to others. All writing will be done in a collegial manner.
* Mathematical vocabulary is important to know in order to verbalize and write about mathematics.

**Mathematical Thinking Goals**:

* View mathematics as a system of interrelated principles.
* Reason mathematically.
* Communicate mathematics accurately: verbally, in writing, and in the use of various manipulatives and representations.
* Use a variety of tools, physical models, and appropriate technology to demonstrate an understanding of concepts and relationships and their applications in the world in which we live.
* Think critically as you analyze problems.
* Reflect on what you know and how you know it.
* Make conjectures and present arguments to support or explain conjectures.
* Develop the habit of looking for counter-examples.
* Synthesize key mathematical ideas and problem-solving approaches by applying them to diverse problems and by exploring the interconnections between them using appropriate technologies.
* Demonstrate an understanding of the key mathematical concepts of the course.

**Student Responsibility**:

Your cooperative spirit and active participation are what build a strong community of learners. Your responsibility is to others as well as to yourself. Being prepared, helping others when you can, and dealing with problems early so they don’t interfere with learning – all are responsibilities of learners. A key component of student responsibility will be the team. Research clearly shows that students who form and maintain study groups inside and outside of class more readily succeed in college-level work. I will encourage you and do my part to help maintain study groups; however, the real responsibility will be with you to make them engaging and productive.

**Instructor Responsibility**:

I am here to help you learn and to help you develop as learners. I will provide direct instruction, guided-inquiry instruction, group activities, and individual activities for you to participate in and build your abilities. I have high standards and commit to support those standards with appropriate instruction. Please see me about any problems that arise, or to talk about any aspect of class.

Tentative Content Schedule

* Number systems
* Word problems
* Prime factorization
* Fractions
  + Operations
  + Types
  + ↔ Decimal, ↔ Percent
  + Rates of change
  + Proportions
* Conversions
  + Within and between metric and English
* Variables
* Linear Equations & Inequalities
  + Solving
  + Word equations
  + Forms (slope-int., pt.-slope, gen., std.,)
  + Data – line of best fit
  + Parallel / perpendicular lines
* Systems of equations & inequalities
  + Solving
  + Graphing
* Functions (Relations)
  + Notation – understand concept
  + Evaluate
  + Transformations
* Exponential / Logarithmic Functions
  + Growth / decay, identifying
  + Inverses
  + Properties of logarithms
  + Solving
  + Transforming
  + Models
* Polynomial Functions Unit A
  + Standard form (degree, terms, classify, coefficients)
  + Add, subtract polynomials
  + Multiply polynomials
* Quadratic Functions
  + Transformations
  + Factoring
  + Solving
  + Forms
  + Characteristics / Properties
  + Graphing – Circles back to transformations
  + Solving Inequalities
  + Models
* Polynomial Functions Unit B\*
  + Divide polynomials\*
  + Solving\*
  + Graphs (end behavior)\*
  + Transformations\*
  + Models\*
* Sequences & Series
  + Recursive vs. explicit
  + Summation notation
  + Construct functions from

2nd semester or additional first semester

* Polynomial Functions Unit B
  + Dividing polynomials
  + Solving
  + Graphs (end behavior)
  + Transformations
  + Models