Math 20-1

Mr. Mikula, 2015

Materials

Students will be expected to bring the following materials to class daily, unless otherwise instructed:

- Pencils, eraser, pen
- Lined loose-leaf paper
- A scientific or graphing calculator

Expectations

In order to succeed in this course, students must attend class regularly and be active participants – ask questions, contribute to discussions, and work on exercises. It is the student's responsibility to make up for any missed work due to absences. The secret to high school mathematics, like most things in life, is daily practice. A recommended **15 - 30 minutes of working problems and reading, five out of seven nights a week** is essential for continued success in this course and is representative of the workload in future courses.

Attitude and Behaviour

Racism, Sexism, Homophobia and Swearing:

There is **zero tolerance** for negative attitudes, and disgusting language will **not** be tolerated. If you choose to compromise the respectful classroom environment, you will be removed.

Homework and Exams:

Two homework assignments will be given for each unit. These assignments **must** be completed in order to write the unit exams as scheduled. Exams missed for any reason will be assigned a mark of 0 until they are completed, and must be made up outside of regular class time.

Program Objectives

The main goals of mathematics education are to prepare students to:

- use mathematics confidently to solve problems
- communicate and reason mathematically
- appreciate and value mathematics
- make connections between mathematics and its applications
- commit themselves to lifelong learning
- become mathematically literate adults, using mathematics to contribute to society

Students who have met these goals will:

- gain understanding and appreciation of the contributions of mathematics as a science, philosophy and art
- exhibit a positive attitude toward mathematics
- engage and persevere in mathematical tasks and projects
- contribute to mathematical discussions
- take risks in performing mathematical tasks
- exhibit curiosity

Mathematical Processes

There are critical components that students must encounter in a mathematics program in order to achieve the goals of mathematics education and embrace lifelong learning in mathematics. The program of studies incorporates these seven interrelated mathematical processes that are intended to permeate teaching and learning. These processes are:

- Communication [C]
- Mental mathematics and estimation [ME]
- Connections [CN]
- Reasoning [R]
- Problem Solving [PS]
- Technology [T]
- Visualization [V]

Course Timeline

SEQUENCES AND SERIES

February 3 - 19

February 3: Investigating Patterns and Sequences
February 4: Arithmetic Sequences
February 5: Arithmetic Growth and Decay
February 6: Arithmetic Series
February 9: Geometric Sequences
February 10: Geometric Growth and Decay
February 11: Geometric Series
February 17: Infinite Geometric Series
February 18: Review

February 19: Unit Exam

OPERATIONS ON RADICALS

February 20 - 27

February 20: Entire Radicals and Mixed Radicals
February 23: Adding and Subtracting Radicals
February 24: Multiplying Radicals
February 25: Dividing Radicals – Part One
February 26: Dividing Radicals – Part Two

February 27: Unit Exam

TRIGONOMETRY

March 2 - March 13

March 2: Rotation Angles and Reference Angles

March 3: Trigonometric Ratios for Angles from 0 to 360 degrees

March 4: Applications of Reference Angles and the CAST Rule

March 5: Special Triangles, Exact Values, and the Unit Circle

March 6: The Sine Law

March 9: The Cosine Law

March 10: Problem Solving and The Ambiguous Case of the Sine Law

March 11: Further Applications Involving the Sine and Cosine Laws

March 12: Review

March 13: Unit Exam

ABSOLUTE VALUE FUNCTIONS AND RECIPROCAL FUNCTIONS

March 17 - March 25

March 17: Absolute Value Functions

March 18: Solving Absolute Value Equations – Part One

March 19: Solving Absolute Value Equations – Part Two

March 20: Absolute Value Transformations

March 23: Reciprocal Functions

March 24: Review

March 25: Unit Exam

FACTORING AND APPLICATIONS

April 7 - April 17

April 7: Review of Factoring

April 8: Factoring Trinomials of the Form $ax^2 + bx + c$

April 9: Factoring Trinomials of the Form $a(f(x))^2 + b(f(x)) + c$

April 10: Factoring $a^2b^2 - b^2y^2$ and $a^2(f(x))^2 - b^2(g(x))^2$

April 13: Solving Quadratic Equations using Factoring

April 14: Solving Radical Equations using Factoring - Part One

April 15: Solving Radical Equations using Factoring - Part Two

April 16: Review

April 17: Unit Exam

QUADRATIC FUNCTIONS AND EQUATIONS

April 20 - May 5

April 20: Connecting Zeros, Roots, and x-intercepts

- April 21: Analyzing Quadratic Functions Part One
- April 22: Analyzing Quadratic Functions Part Two
- April 23: Equations and Intercepts from the Vertex and the Point

April 27: Converting from to Standard Form by Completing the Square

April 28: Roots of Quadratic Equations – The Quadratic Formula

April 29: Roots of Quadratic Equations – The Discriminant

April 30: Applications of Quadratic Functions - A Graphical Approach

May 1: Applications of Quadratic Functions – An Algebraic Approach May 4: Review May 5: Unit Exam

RATIONAL EXPRESSIONS AND EQUATIONS

May 6 - May 22

May 6: Simplifying Rational Expressions - Part One
May 7: Simplifying Rational Expressions - Part Two
May 8: Addition and Subtraction of Rational Expressions - Part One
May 11: Addition and Subtraction of Rational Expressions - Part Two
May 12: Multiplication of Rational Expressions
May 13: Division of Rational Expressions
May 14: Rational Equations - Part One
May 19: Rational Equations - Part Two
May 20: Solving Problems Involving Rational Equations
May 21: Review
May 22: Unit Exam

LINEAR AND QUADRATIC SYSTEMS AND INEQUALITIES

May 25 - June 4

May 25: Solving a System of Linear-Quadratic Equations

May 26: Solving a System of Quadratic-Quadratic Equations

May 27: Solving Linear Inequalities in Two Variables Without Technology

May 28: Solving Quadratic Inequalities in Two Variables Without Technology

May 29: Solving Inequalities in Two Variables Using Technology

June 1: Solving Quadratic Inequalities in One Variable by Case Analysis

June 2: Solving Quadratic Inequalities in One Variable by Sign Analysis

June 3: Review

June 4: Unit Exam

REVIEW

June 8 - June 18

Evaluation

Assessment of general and specific outcomes will be based on the mastery and/or development of key learner outcomes in the form of a percentage-graded report card. These grades provide a summative statement of student achievement based on assessment evidence at the time of the report card, characterizing a level of understanding of subject-area content and making evident a level of knowledge and skills.

Final reported grades will be a reflection of the following distribution:

Sequences and Series:	11%
Operations on Radicals:	7%
Trigonometry:	11%
Absolute Value Functions and Reciprocal Functions:	7%
Factoring and Applications:	10%
Quadratic Functions and Inequalities:	12%
Rational Expressions and Equations:	12%
Linear and Quadratic Systems and Inequalities:	10%
Final exam:	20%
Total:	100%
The Math 20-1 Final Exam is scheduled for June 19th, 2015	

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