



## Loyola High School

### Secondary 3 Honors Mathematics

Teacher:	Email:	Phone:
G. Antonecchia	<a href="mailto:antonecchiag@loyola.ca">antonecchiag@loyola.ca</a>	514-486-1101 ext. 640

**Online Textbook and Resource:** -Math-Help-Services (MHS) <http://math-help-services.org>  
-Visions Textbook (can be borrowed from library as a reference)

**Websites:** <http://moodle.loyola.ca> (contains topic-by-topic information)

**Supplies:** 2 duo-tangs (provided), loose leaf, **pencils, eraser, ruler**, 1½" binder.  
Basic scientific calculator (TI-30X IIS is recommended).

#### Evaluation

**Term mark distribution:** Term 1 - 20%    Term 2 – 20%    Term 3 – 60%.

**Competencies: -Communication & Reasoning: 70%**

Tests 50%, Quizzes and Assignments/Homework 20% (Final weightings may vary).

**-Situational problems: 30%.**

#### Exams

- At least one Situational Problem will be given each term.
- A mid-year evaluation is expected to be written during the Dec. Exam period. (Details TBA)
- The June exams cover the entire year's work and worth 50% of the term 3 grade.

#### Homework/Assignments

Homework is assigned daily. It will be collected and marked sporadically. Assignments, practice examples and problems will be done in class and completed at home if needed. Failure to complete homework will result in loss of marks and/or disciplinary action.

#### Quizzes

Quizzes may be given without prior warning to evaluate day-to-day understanding of the material.

#### Tests

Class tests will be given each term. Students are responsible for advising parents/guardian about test results. An email will be sent to parents to inform about upcoming scheduled tests. Homework, quizzes and tests are to be **done in pencil** (up to 5% penalty for work not done in pencil).

#### Honors expectations

The Honors Math student is expected to be able to work at a faster pace and is responsible to stay on top of his understanding. Self-motivation, independence and good work habits are assets in this course.

#### Advancement

Secondary 3 is an important year as it marks the transition of a student from cycle 1 to cycle 2. In general, students are expected to sustain their grades in order to continue pursuing NS 4 Honors Math (Science profile) in Sec. 4; otherwise students will be placed in NS 4 instead,

Students are expected to further develop their work ethic, study habits and time management skills as they continue their progress in becoming independent and active learners.

**Extra help:** Math extra help is available after school every day in the Math tutorial room and with individual teachers as posted on the course Moodle page.

# Course Outline

## TOPICS

### **Pythagorean Theorem and Real Numbers**

- Solving for sides of right triangles
- Pythagorean triples
- Right triangles on the grid (Cartesian plane and distance formula)
- Special Right triangles (solving sides algebraically)
- Number sets (Rational and Irrational - Real numbers)
- Interval and set builder notations for sets of Real numbers
- Representing intervals on a number line
- Classifying the various number sets
- Radical expressions

### **Algebraic Expressions**

(Calculators not permitted)

- Properties of exponents and radicals
- Scientific notation ( $\div$ ,  $\times$ ,  $+$ ,  $-$ )
- Addition and subtraction of polynomials
- Multiplication, division, and long division of polynomials
- Distributive Property
- Various applications (i.e geometry and word problems)
- Simplifying algebraic and radical expressions with negative, fractional and algebraic exponents

### **Factoring**

(Calculators not permitted)

- Greatest common factor
- Simple trinomials
- Grouping
- Complex Trinomials
- Difference of squares
- Difference and sum of cubes (time permitting)
- Simplifying rational expressions (multiplication, division, addition, and subtraction)

### **Equations/Inequalities**

(Calculators not permitted)

- Solving equations and application word problems
- Building and solving inequalities
- Solving quadratic equations and word problem applications (by factoring)
- Graphing two-variable inequalities on a half plane

### **Statistics**

- Interpreting and estimating the correlation coefficient
- Interpreting contingency tables
- Predictions based on line or regression
- Estimating the equation of the regression line

### **Relations and functions**

- Definition of functions
- Modes of representation (tables, Cartesian graphs, rule, description)
- Characteristics and Properties of functions  
(i.e. domain, range, max, min, increasing, decreasing,  $+$ ,  $-$ )
- Graphing and identifying the rule of different types of functions  
(i.e. zero, rational, partial, direct and squared)

### **Linear Relations**

- Rate of change
- Initial value
- Equation of a line in standard form  $y = ax + b$
- x & y intercepts
- Linear Systems (limited to the form  $y = ax + b$ )
- Point of intersection (Solving through comparison, substitution, and elimination methods)
- Parallel, perpendicular, vertical and horizontal lines
- Comparing lines and equations (in all equation forms)
- Identifying the intercepts and parameters of a line given in general, function or symmetric form
- Solving semi-linear systems (no discussion or calculation of vertex).

### **Probability**

- Probability of outcomes and events (dependent and independent events)
- Contingency tables and tree diagrams
- 3 ring Venn diagrams
- Conditional probability
- Geometric probability