COLLINGWOOD SCHOOL
MORVEN CAMPUS

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Course Outline – Mathematics 8/9 – 2016/17

THE ACCELLERATED COURSE
Welcome to Math 8/9. This year we will cover two years of math in one. As you can see from the year outline below there are many topics to master. In addition, we will challenge you with weekly contest problems. Needless to say the pace of the course will be fast. The curriculum will focus on problem based learning to provide students with the opportunity to make connections between math and the real world. Our goal is for students to develop deep mathematical understanding and fluency, logical reasoning, analytic through, and creative thinking, by actively investigating problems and finding solutions.

HOW TO BE SUCCESSFUL IN MATH 8/9:
- Arrive to class on time with proper materials ready to learn
- Be willing to engage in challenging math problems
- Be respectful of the learning process and your peers around you
- Keep up to date and well organized notes
- Check PCR regularly for homework and class updates
- Complete all homework (if you are having difficulty, schedule for an appointment with your teacher)

ASSESSMENT:
- Unit Tests/Projects: 60%
- Quizzes: 20%
- School Based Final Exam: 20%

RESOURCE MATERIALS:
- Meng, S.K. & Yoong, W.K., (2006) *New Elementary Mathematics Syllabus D2 New Edition*. Singapore: EDP Pan Pacific
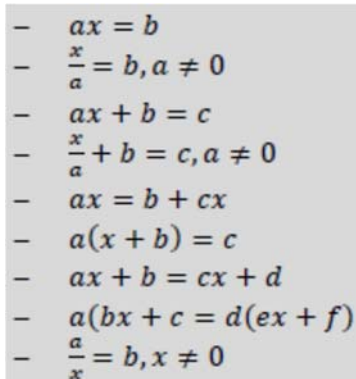- Mickelson, R.J., (2012) *Theory and Problems for Mathematics 9 3rd Ed*. Surrey, BC: Crescent Beach Publishing
- http://collingwoodmath.weebly.com/math-9.html

MATERIALS:
- Acceptable computer device
- Scientific calculator
- Mickelson Workbook
- Pencil, whiteboard marker, and graphing notebook

LEARNING OUTCOMES:
By the end of grade 9, it is expected that students will:

- Demonstrate an understanding of exponent laws with whole-number exponents

- Demonstrate an understanding of operations on powers with whole-number exponents

- Determine the square root of positive rational numbers that are both perfect and non-perfect squares

- Solve problems that involve operations on radicals and radical expressions with numerical and variable radicands

- Model, record, and explain the operations of addition, subtraction, multiplication and division of polynomial expressions, concretely, pictorially, and symbolically (limited to polynomials of degree less than or equal to 2)

- Demonstrate an understanding of common factors and trinomial factoring

- Demonstrate an understanding of relations

- Demonstrate an understanding of slope with respect to: rise and run, line segments and lines, rate of change.

- Describe and represent linear relations using: words, ordered pairs, tables of values, graphs, and equations,

- Determine the characteristics of the graphs of linear relations, including the: intercepts, slope

- Relate linear relations expressed to their graphs in: slope-intercept form, general form

- Determine the surface area and volume of composite 3-D objects to solve problems

- Demonstrate an understanding of similarity of polygons

- Model and solve problems using linear equations of the form

  - $ax = b$
  - $\frac{x}{a} = b, a \neq 0$
  - $ax + b = c$
  - $\frac{x}{a} + b = c, a \neq 0$
  - $ax = b + cx$
  - $a(x + b) = c$
  - $ax + b = cx + d$
  - $a(bx + c = d(ex + f)$
  - $\frac{a}{x} = b, x \neq 0$

  Where a, b, c, d, e, and f are rational numbers

- Interpret data and evaluate statistical summaries.
- Use technology tools to plot data, identify lines of best fit, and detect outliers.
- Demonstrate an understanding of financial literacy including creating budgets, interest and savings

COURSE CONTENT AND SEQUENCE:

Unit 1: Square roots and Exponents
- Real number system
- Square roots
- Pythagorean Theorem
- Order of Operations
- Exponent Laws
    - Product
    - Quotient
    - Power
    - Zero exponent

Unit 2: Polynomials
- Defining Polynomials
- Adding and Subtracting Polynomials
- Multiplying and Dividing Polynomials

Unit 3: Factoring
- Common factors
- Factoring quadratics
- Difference of squares and perfect square trinomials

Unit 4: Solving Equations
- Intro to equations
- Removing fractions, decimals, and brackets
- Solving for variables
- Solving quadratic equations
- Solving linear inequalities
- World problems:
    - Number, Age, Coin, Quadratic

Unit 5: Linear Relations
- Graphing linear equations
    - $Y=mx+b$
    - slope
- Standard Form
    - Vertical/Horizontal lines
- Matching equations of graphs
- Finding the equation of the line
- **Project**

Unit 6: Radicals
- Simplifying Radicals
- Multiplying Radicals
- Adding and Subtracting Radicals
- Rationalizing the denominator (Denominator has 1 term)

Unit 7: Geometry
- Unit Circle
    - Chord properties
    - Central and Inscribed Angles
- Similar Polygons and proportional reasoning

Unit 8: Surface Area and Volume
- Surface Area
    - Cubes, Rectangular solids, Prisms, Pyramids, Cylinders, Cones and Spheres.
- **Project**

Unit 9: Statistics
- Analysing data and statistical summaries
- Scatterplots and line of best fit
- **Project**

Unit 10: Finance
- Budgets, interest, and compound interest
- **Project**

POLICIES & PROCEDURES

Please ensure that you have read and understand the following Collingwood School policies and documents:
- Punctuality Protocol (for assignments and tests)
- Acceptable Computer Use Policy
- Academic Integrity Document (Plagiarism Policy)
- Habits of A Successful Learner / Work Habits Rubric

CONTACT

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