This Course Outline is based upon the Ministry of Education and Training Ontario Curriculum for Grade 9 Applied

Mathematics as per the revised document of 2005.

***Board:*** Toronto District School Board

***School:*** East York Collegiate Institute

***Curriculum Leader:*** R. Singh

***Developing Teachers:*** M. Atzemis, A. Chou, R. Singh

***Date of Revision:*** January 2014

***Course Title:*** Foundations of Mathematics, Grade 9, Applied

***Grade:*** 9

***Code:*** MFM1P

***Credit Value:*** 1.0

***Textbook:*** Pearson Math 9, Cooke et al 2007

***Resources:*** Revised Workbook for Mathematics 9: Applying the Concepts (McGraw-Hill, 2006) Manipulatives, Graphing Calculators & Geometers’ Sketchpad, TIPS4RM Materials (2006) & EQAO Materials (2006) Algebra with Pizzazz & Pre-Algebra with Pizzazz

**Course Description**

This course enables students to develop an understanding of mathematical concepts related to introductory algebra, proportional reasoning, and measurement and geometry through investigation, the effective use of technology, and hands-on activities. Students will investigate real-life examples to develop various representations of linear relations, and will determine the connections between the representations. They will also explore certain relationships that emerge from the measurement of three-dimensional figures and two-dimensional shapes. Students will consolidate their mathematical skills as they solve problems and communicate their thinking. Throughout the course, students will engage in the following processes: Problem Solving, Reasoning and Proving, Reflecting, Selecting Tools and Computational Strategies, Connecting, Representing, Communicating.

**Strands**

Measurement and Geometry 36 periods Number Sense and Algebra 39 periods Linear Relations 23 periods

**Program Planning Considerations**

***Exceptional Students****:* Additional time will be allowed for tests. Additional accommodations will be provided in consultation with the Guidance, Special Education and ESL departments.

***Technology:*** Manipulatives, Graphing Calculators, and Geometer’s Sketchpad will be utilized for hands-on and technology-related applications.

***Career Education:*** Links to related fields will be established throughout the course. ***Co-operative Education****:* These will be provided in association with Guidance Department. ***Mathematics Anxiety****:* Attention will be addressed according to the following:

• Cultural perspectives

• Positive reinforcements

• Variety of assessment techniques

• Group structures

• Consideration for Learning Styles

**Learning Skills**

Assessment of the learning skills will be done on an ongoing basis throughout the academic year by observations of students at work, checklists and interviews. This may include:

Class work/homework (Work habits, homework and organization)

Completed work and seeking assistance (Organization and initiative)

Persistence and independence at tasks (Working independently and initiative)

Extension of task (Organization and initiative**)**

Achievement of group goals (Team work)

**Assessment Strategies**

A variety of teaching/assessment strategies will be used during the school year to address students’ needs. Formative assessments will be ongoing through out the academic year. These may include:

• Diagnostic assessment

• Formative assessment

• Performance assessment

• Portfolio assessment

• Rubrics

• Checklists

**Term Summative Evaluations (70% Term Work)**

• Tests, quizzes, performance tasks and other forms of summative evaluations will occur throughout the academic year at the end of units of work.

• Students will be provided with reasonable opportunities to master skills relating to the achievement of the curriculum expectations before assessment and evaluation occurs.

• Major evaluations will be announced at least one week in advance.

• Accommodations will be made for school activities, statutory holidays, religious days, cultural days, sports events and other occurrences that may impact on any scheduled evaluation. *It is the student’s responsibility to notify teachers of such absences in advance and to make up missed work.*

• Absence on the day of an evaluation must be documented. If a student must miss an evaluation, s/he is expected to:

a) see the teacher before the absence to arrange for an alternative date to make up the evaluation; or

b) in case of illness or unexpected absence, present a note to the teacher, signed by a parent or guardian, immediately upon their return to explain the absence. An alternate evaluation will then be scheduled at a mutually convenient time.

• The East York Late Policy[[1]](#footnote-1) applies to all assignments and evaluations.

• Cheating will not be tolerated in any form and will be dealt with appropriately.

**Final Mark Calculation**

Calculation of the Term Mark will be based upon the ***Categories*** of the ***Achievement Chart***. This chart is meant to assist teachers in planning instruction and learning activities for the achievement of the curriculum expectations. It is also used in designing assessment and evaluation tools and in providing feedback to students. Each mathematical topic will contain each category in the chart due to the integrated nature of the discipline in mathematics. Final marks will be calculated as follows:

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| **Term Work: 70 %** |  |
| Knowledge and Understanding: | 50% |
| Application: | 20% |
| Thinking and Inquiry: | 20% |
| Communication: | 10% |
| **Final Summative Evaluations: 30 %** |  |
| EQAO Assessment | 10% |
| In-class Culminating Activity | 10% |
| Final exam | 10% |

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|  | **K** | **A** | **T** | **C** | **Total** |
| **Assignments** | 10 | 4 | 4 | 2 | 20 |
| **Quizzes** | 10 | 4 | 4 | 2 | 20 |
| **Tests** | 15 | 6 | 6 | 3 | 30 |
| **Final Exam\*** |  |  |  |  | 30 |
| **Totals** | 50% | 20% | 20% | 10% | 100% |

**Communication**

***Access to extra help and mark records***. Students are encouraged to consult their teachers on a regular basis for extra help and guidance as it relates to improving their academic performance. Students are also expected to discuss strategies for improving their grades with their teachers. Students are expected to view their report cards as an indication of their current achievement and discuss with teachers for clarification.

***Communication with Parents/Guardians***. Comments pertaining to academic achievement and learning skills placed on the report cards are primarily to provide feedback for parents/guardians as well as students. Parent/guardian interviews can be used for one to one discussion. At times it may be necessary to contact parents/guardians by telephone to discuss a student’s performance. Parents/guardians are also encouraged to contact teachers as and when the need arises

**Textbook:** Workbook

**Strand #1: Measurement & Geometry (36 periods) ?**

Overall Expectations:

• To solve problems involving the measurements of two-dimensional shapes and the volumes of three-dimensional figures;

• To determine, through investigation, the optimal values of various measurements of rectangles;

• To determine, through investigation facilitated by dynamic geometry software, geometric properties and relationships involving two- dimensional shapes, and apply the results to solving problems.

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| **Per #** | | **TOPIC** | | | | | **Section** | | **ASSIGNMENT** | |
| 1 | 02/04 | | | Rules & Regulations + diagnostic test | |  | |  | |
| 2 | 02/07 | | | perimeter and area | |  | | **Work book: page 29 – 32 do all questions** | |
| 3 | 02/08 | | | Perimeter & area | |  | | **Work book: page 29 – 32 do all questions. Use pearson if necessary** | |
| 4 | 02/09 | | | Review order of operations. Quiz perimeter area | |  | | Use pearson or your own resources. | |
|  |  | | | **Number Sense and Algebra:**  Simplifying numerical expressions/exponents | |  | |  | |
| 5 | 02/10 | | | Measuring Right Angles & Pythagoras  **Geometric construction group activity** | |  | | [**http://www.mathlove.com/new3/product/docs/PZL0B.pdf**](http://www.mathlove.com/new3/product/docs/PZL0B.pdf)  **homework: page 50 – 52 all questions** | |
|  | 02/11 | | | Tuesday pythagoras continued | |  | | **homework: page 50 – 52 all questions** | |
| 4 | 02/14 | | | Lesson: Area and Perimeter of Composite figures. Students will use geoboards to construct various figures and calculate perimeter and area | |  | | **Workbook: page 33 – 36 all questions.**  [**http://www.bgfl.org/bgfl/custom/resources\_ftp/client\_ftp/ks2/**](http://www.bgfl.org/bgfl/custom/resources_ftp/client_ftp/ks2/)  **maths/perimeter\_and\_area/index.html** | |
| 5 | 02/15 | | | EQAO questions + review for test | |  | | **2000 #11, (2001,2002 #1,12), (2003-2004 #9),**  **Winter 2006(#13) Spring 2006 #14, winter 2007 #17,18, Spring 2007 #17, page 39(#1,#2), page 40 #3(all), page 45 #2, 3,4** | |
| 6 | 02/16 | | | **test** | |  | |  | |
| 7 | 02/17 | | | **Beginning of problem solving unit**  **Introduce metacognition** Polya’s 4 step problem solving + applied to examples that we come up with + problems involving area | |  | | <http://illuminations.nctm.org/LessonDetail.aspx?id=L816>  **We will give them the famous 2 3 5 litre bottle example**  [**http://nlvm.usu.edu/en/nav/frames\_asid\_273\_g\_4\_t\_4.html?from=category\_g\_4\_t\_4.html**](http://nlvm.usu.edu/en/nav/frames_asid_273_g_4_t_4.html?from=category_g_4_t_4.html)  **+ , Spring 2007 #17**  **EQAO(2001-2002 task 1) winter 2007 #21** | |
|  |  | | | **Problem solving + volume of prism + cylinder** | |  | | One question from EQAO(problem solving), + page 53A, page 54 #1(a,c),  page 55 g, h + questions from Pearson. | |
| 8 | 02/21 | | | Volume of Cones(use manipulatives to show relationship between the volume of cylinder and volume of cone. Will also show volume of sphere 2/3 volume of cyl | |  | | Page 55(all), page 57(problem solving #2-5), page 57 #6(c,d)  ,page 58 #2,3) page 62 #3 | |
| 11 | 02/25 | | | **Eqao questions** | |  | | **2000(1), winter 2005(2,21,22,23,24),winter 2006(3,14)**  **MULTIPLE CHOICE**  **EQAO QUES: 2000-2001TASK #1, 2003-2004(Global proportions)** | |
| 12 | 02/28 | | | Review | |  | |  | |
| 13 | 03/01 | | | TEST | |  | |  | |
| 14 | 03/07 | | | Angles in a triangle (a.s.t.t), c.a.t, s.a.t, e.t.t  i.t.t, types of triangles | |  | | Lesson #1(smartboard)  h.w Book #2 page 238 relevant terms, page 239, go through all theorems. Page 244(all), page(247 all), page 250 #5, #6, page 255 # 1 | |
| 15 | 03/08 | | | Angles of Quadrilaterals |  | | | | Lesson #2 (smartboard)  Page 258 #10(a), 10(f), page260 #3, page 261 #5(c) | |
| 16 | 03/09 | | | Angles of a Polygon |  | | | | Lesson #3 smartboard. Page 258 #9, 10,  Page 259 #1(d,e,f), 2, page 260 #3, 4, page 261 #5(c), page 262 g,h | |
| 17 | 03/21 | | | Review + Parallel Lines |  | | | | Lesson #4 Smartboard. Page 255 #8, page 261 #5b,d,f | |
| 18 | 03/22 | | **EQAO questions related to angles in a triangle + parallel lines** | |  | | | | **2000-2001 #8**  **2001-2002 #10, #5(short answer) #3(tasks)**  **2002 –2003 booklet #1(#2, #5), task 3(booklet #2), #4(booklet #3)**  **2003 – 2004 #5, #2.2,#2.4(short answer)**  **Winter 2005 #18, 19, 20, 25, 26**  **Spring 2006 #18, 19, 20, 25 , 26** | |
| 19 | 03/23 | | EQAO continued | |  | | | |  | |
| 20 | 03/24 | | Review | |  | | | |  | |
| 21 | 03/25 | | TEST FRIDAY | |  | | | |  | |
| 22 | 03/28 | | High yield strategies day 0 | |  | | | |  | |
| 23 | 03/29 | | High yield strategies day 1 | |  | | | |  | |
| 24 | 03/30 | | High yield strategies day 2 | |  | | | |  | |
| 25 | 03/31 | | Consolidation assignment on above marked in application category | |  | | | |  | |
| 26 | 04/01 | | Integer addition and subtraction | |  | | | | See smartboard lesson + use own resources for h.w | |  |
| 26 | 04/04 | | Review of graphing + activity | |  | | | | Smartboard lesson #1 | |  |
| 27 | 04/05 | | Lines of best fit/scatter plot | |  | | | | Smartboard lesson #2 book 1 page 98,99,page 100, page 101#1,page 103,page104.page 105 | |  |
| 28 | 04/06 | | Curve of best fit | |  | | | | Smartboard lesson #3 | |  |
| 26 | 04/07 | | Graphing linear and non linear relationships | |  | | | | Smartboard lesson #4 | |  |
| 27 | 04/08 | | Non linear relationships | |  | | | | Smartboard lesson #4a | |  |
| 28 | 04/11 | | Interpreting graphs | |  | | | | Smartboard lesson #5 page 130 - 135 | |  |

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| **UNIT #6: LINEAR & NONLINEAR RELATIONS (5 periods)** | | | | | |
| 29 |  | TEST Thursday April 21st 2011 |  |  |  |
|  |  | New Unit analyzing linear relationships |  |  |  |
| 31 | 04/26 | Finite differences |  | Smartboard lesson #6 | Page 118 - 122 |
| 32 | 04/27 | Rate of change from a table |  | Smartboard lesson #7 | Make up worksheets |
| 33 | 04/28 | Rate of change from a graph + pictures+ rise run |  | Smartboard lesson #8 | Page 136 – 138 + supplemental work |
| 34 | 04/29 | Stories with rate of change |  | Supplement to smartboard lesson #8 | Page 140 –148 (work book) |
| 35 | 05/02 | Equation of a line using table + direct variation |  | Smartboard lesson #9 | Page 161 – 164(workbook) |
| 36 | 05/03 | Equations of a line using table + partial variation. |  | Smartboard lesson #10 | Page 161 – 164 (workbook) |
| 37 | 05/04 | Equation of a line from a word description |  | In progress | Page 165 – 166(workbook) |
| 38 | 05/05 | MATH FUN DAY |  |  |  |
| 39 | 05/06 | Drawing a line from a word description(using a table of values, not slope y intercept method) |  | In progress | Page 168 -188(workbook) tons of exercises |
| 40 | **05/09** | **Review EQAO PROBLEMS** |  |  |  |
| 41 | **05/10** | **Review EQAO PROBLEMS** |  |  |  |
| 42 | **05/11** | **Review EQAO PROBLEMS** |  |  |  |
| 43 | 05/12 | Review for test |  |  |  |
| 44 | 05 13 | TEST |  |  |  |

**Strand #3: Number Sense and Algebra (39 periods)**

Overall Expectations:

• To solve problems involving proportional reasoning;

• To simplify numerical and polynomial expressions in one variable;

• To solve simple first-degree equations.

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| **Per #** | | | **TOPIC** | | **Section** | **Lessons** | **Comment** |
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|  | | | | | | | |
| **UNIT #10: POLYNOMIALS (8 periods)** | | | | | | | |
| 45 | 05/16 | | Collecting Like Terms, adding and subtracting | |  | **Use algebra tiles to motivate concept** | Single variable terms only. |
| 46 | 05/17 | | Adding /subtracting polynomials | |  | Use algebra tiles to illustrate concept |  |
|  | | | | | | | |
| **UNIT #11: EQUATIONS (13 periods)** | | | | | | | |
| 47 | | 05/18 | | One-Step Equations |  |  |  |
| 48 | | 05/19 | | Two-Step Equations |  |  |  |
| 49 | | 05/20 | | Variables on Both Sides |  |  |  |
| 50 | | 05/23 | | Translating Words to Math |  |  |  |
| 51 10 | | 05/24 | | Word Problems |  |  |  |
| 52 12 | | 05/25 | | Review |  |  |  |
| 53 | | 05/26 | | **PRACTICE EQAO** |  |  |  |
| 54 | | 05/27 | | TEST EQUATIONS |  |  |  |
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|  | | **Unit #12 Ratios and Proportions** | | | | | |
| 55 | | 05/30 | | Converting Ratios to Fractions to Decimals |  |  |  |
| 56 | | 05/31 | | Proportions |  |  |  |
| 57 | | 06/1 | | Ratio Applications |  |  |  |
| 58 | | 06/02 | | Unit Rates |  |  |  |
| 59 | | 06/03 | | QUIZ  Percent of a Number |  |  |  |
| 60 | | 06/06 | | Finding the Percent |  |  |  |
| 61 | | 06/07 | | Review |  |  |  |
| 62 | | 06/08 | | Test and/or Performance Task |  |  |  |
| 63 | | 06/09 | | Culminating Activity |  |  |  |
| 64 | | 06/10 | | Culminating Activity |  |  |  |
|  | |  | | EQAO DATES TO B E DETERMINED |  |  |  |

1. [↑](#footnote-ref-1)