**EAST YORK COLLEGIATE**

**MPM1D Course Outline 2013-2014**

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

Mathematics as per the revised document of 2005.

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

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

***Curriculum Leader:*** R. SINGH

***Developing Teachers:*** G.Kyritsis, L Lahtinen, O.Plagianakos

***Date of Revision:*** June 2012

***Course Title:*** Principles of Mathematics, Grade 9, Academic

***Grade:*** 9

***Code:*** MPM1D

***Credit Value:*** 1.0

***Textbooks:*** Principles of Mathematics 9, McGraw-Hill Ryerson (2006)

Exercise & Homework Book for Principles of Mathematics 9, McGraw-Hill (2006) Grade 9 Academic Mathematics Workbook – Revised, Tree House (2007)

***Resources:*** Teacher-made Worksheets – Course Binder

Manipulatives, Graphing Calculators & Geometer’s 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 algebra, analytic geometry, and measurement and geometry through investigation, the effective use of technology, and abstract reasoning. Students will investigate relationships, which they will then generalize as equations of lines, and will determine the connections between different representations of a linear relation. They will also explore relationships that emerge from the measurement of three-dimensional figures and two-dimensional shapes. Students will reason mathematically and communicate their thinking as they solve multi-step problems.. Throughout the course, students will engage in the following processes: Problem Solving, Reasoning and Proving, Reflecting, Selecting Tools and Computational Strategies, Connecting, Representing, Communicating. **Part of the course expectations is the incorporation of Financial Literacy into the curriculum. The ability for students to be aware of their financial surroundings using the curriculum as the medium will benefit students tremendously.**

**Strands**

Number Sense and Algebra 41 periods Linear Relations 22 periods Analytic Geometry 19 periods Measurement and Geometry 19 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 will include:

Classwork/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 to address students’ needs will be used during the school year. 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, tasks and other forms of term summative evaluations will occur throughout the academic year at the end of units of work as outlined in the accompanying course outline.

• 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 applies to all assignments and evaluations. See your Agenda book.

• 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%** | ***Levels of Achievement:*** |
| Knowledge and Understanding: | 50% |  | Level 1: 50 – 59% |
| Application: | 20% |  | Level 2: 60 – 69% |
| Thinking and Inquiry: | 20% |  | Level 3: 70 – 79% |
| Communication: | 10% |  | Level 4: 80 – 100% |
| **Final Summative Evaluations:** |  | **30%** |  |
| EQAO Assessment | 5% \_ + | 5%eqao problems |  |
| Final Summative Evaluations | 20%  15% |  |  |

**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 are placed on the report cards are primarily to provide feedback for parents/guardians as well as students. Parent/guardian nights 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.

**MPM1D daily course Outline 2012-2013**

**Textbook:** Principles of Mathematics 9, McGraw-Hill Ryerson (2006) **[TXT]**

**Strand #1: Linear Relations (22 periods)**

Overall Expectations:

• To apply data management techniques to investigate relationships between two variables;

• To determine an understanding of the characteristics of a linear relation;

• To connect various representations of a linear relation.

**Strand #2: Number Sense and Algebra (41 periods)**

Overall Expectations:

• To demonstrate an understanding of the exponent rules of multiplication and division, and apply them to simplify expressions;

• To manipulate numerical and polynomial expressions;

• To solve first-degree equations.

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| **Per #** | **TOPIC** | **Section** |  |
| 0 | Diagnostic Test |  | Monday February 4th 5th if necessary. |
| 1 | Adding Integers, Subtracting Integers, Multiplying & Dividing Integers |  | Tues February 5th |
| 2 | Powers & Order of Operations with Integers |  | Wed February 6th |
| 3 | Adding & Subtracting Rational Numbers |  | Thursday feb 7th |
| 4 | Multiplying & Dividing Rational Numbers | 1.5 | Friday feb 8th |
| 5 | Exponents & Order of Operations | 3.2 | Monday feb 11 |
| 6 | Review |  | Tuesday feb 12th |
| 7 | TEST |  | Wed feb 13th |
|  | **Linear and Non linear relations** |  |  |
| 1 | Plotting Points in the Cartesian Plane | 2.3,2.4 | Thursday feb 14th |
| 2 |  |  | P.D DAY Friday feb 15th |
| 3 | Graphing Linear Relations and non linear relations | 2.5 | Monday feb18th |
| 4 | Mini-test |  | Tuesday feb 19th |
|  | **UNIT #4: POLYNOMIALS** |  |  |
| 1 | Collecting Like Terms | 3.5 | Wed feb 20th |
| 2 | Distributive Property (I) | 3.7 | Thurs feb 21st |
| 3 | Multiplying Monomials, dividing monomials | 3.3 | Friday feb 22nd |
| 4 | Distributive Property (II) | 3.7 | Monday feb 25th |
| 5 | Powers of Monomials | 3.3 | Tuesday feb 26th |
| 6 | Communicate with algebra |  |  |
|  | Test Review |  | Wednesday feb 27th |
|  | TEST |  | Thurs feb 28th |

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| **UNIT #5: EQUATIONS** | | | | |
| 1 | One-Step, two step equations | 4.1 | Fri march 1st |  |
| 3 | Variables on Both Sides & Distributive Law | 4.2 | Monday March 4th |  |
| 5 | Fractional Equations | 4.3 | Tuesday March 5th |  |
| 6 | Rearranging Formulae | 4.4 | Wednesday march 6th |  |
| 7 | Review |  | Thursday march 7th |  |
| 8 | TEST |  | Friday march 8th |  |
| 9 | **March break** |  |  |  |
| 10 | **Prep for eqao questions** |  |  |  |
| 11 | **Eqao questions: topic Algebra** |  | **Tuesday March 19th** |  |
|  | | | | |
| UNIT #6: APPLICATIONS OF EQUATIONS (13 periods) | | | | |
| 1 & 2 | Pythagorean Theorem & Applications | 8.1 | Wed march 20th |  |
| 3 | Translating Words into Math |  | 21st |  |
| 4 | Word Problems – Single Quantity | 4.5 | 22nd |  |
| 5 | Word Problems – Two & Three Quantities | 4.5 | 25th |  |
| 6 | Word Problem Review |  | 26th |  |
| 7 | Word Problems – Proportions, Ratios, Percents |  | 27th |  |
| 8 | Review |  | 28th |  |
| 9 | TEST |  | 29th |  |
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| **UNIT #7: MODELLING WITH GRAPHS + slope calculations.** | | | | |
| 1 | Investigation #2: Patterning  Finite Differences | 5.5 | April 1st |  |
| 2 | Applications of Linear Relations:  Direct vs Partial Variation – by hand | 5.1,5.2 | 2nd |  |
| 3 | Slope – given a Graph | 5.3 | 3rd |  |
| 4 | Point-slope Graphing & Geometry Applic. Slope – given Two Ordered Pairs | 5.3 | 4th |  |
| 5 | Slope as a Rate of Change | 5.4 | 5th |  |
| 6 | Review |  | 8th |  |
| 7 | Test |  | 9th |  |

Strand #3: Analytic Geometry (19 periods)

Overall Expectations:

• To determine the relationship between the form of an equation and the shape of its graph with respect to linearity and non-linearity;

• To determine, through investigation, the properties of the slope and y-intercept of a linear relation;

• To solve problems involving linear relations.

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| Per # | TOPIC | | Section | | ASSIGNMENT | Comment |
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| UNIT #9: ANALYSE LINEAR RELATIONS (19 periods) | | | | | | |
| 1 | Equation of a Line: y = mx + b | | 6.1 | | Wed April 10th |  |
| 2 | Equation of a Line: Ax + By + C = 0 (Rearranging for y) | | 6.2 | | 11th |  |
| 3 | Linear Systems – graphically by hand | | 6.7 | | 12th |  |
| 4 | QUIZ  Parallel & Perpendicular Lines equations of. | | 6.4 | | 15th |  |
| 5 | Graphing a Line Using Intercepts | | 6.3 | | 16th |  |
| 14 | Equation of a Line – given Slope & a Point | | 6.5 | | 17th |  |
| 15 | Equation of a Line – given Two Points | | 6.6 | | 18th |  |
| 16 | Applications of the Straight Line | |  | | 19th |  |
| 18 | Review | |  | | 22nd |  |
| 19 | Test #2 and/or Performance Task | |  | | 23rd |  |
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| 8 | **EQAO practice problems on linear relations** |  | | 24th | |
| 9 | **EQAO TEST on linear relations.** |  | | Thurs March 25th | |

Strand #4: Measurement & Geometry (19 periods)

Overall Expectations:

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

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

• To verify, 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 | Comment |
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| UNIT #10: GEOMETRIC RELATIONSHIPS (5 periods) | | | | |
| 1 | Angle Relationships in Triangles |  |  |  |
| 2 | Angle Relationships in Polygons |  |  |  |
| 3 | Special Quadrilaterals |  |  |  |
| 4 | Review |  |  |  |
| 5 | Test and/or Performance Task |  |  |  |
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| UNIT #11: MEASUREMENT RELATIONSHIPS (6 periods) \*\* Use EQAO Academic Formula Sheet \*\* | | | | |
| 1 | Perimeter & Area of Composite Figures |  |  |  |
| 2 | Surface Area & Volume of Prisms & Pyramids |  |  |  |
| 3 | Surface Area & Volume of Cylinders & Cones |  |  |  |
| 4 | Surface Area & Volume of Spheres |  |  |  |
| 5 | Review |  |  |  |
| 6 | Test and/or Performance Task |  |  |  |
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| UNIT #12: OPTIMIZING MEASUREMENTS (8 periods) | | | | |
| 1 | Investigate Measurement Concepts |  |  |  |
| 2 | Perimeter & Area Relationships of a  Rectangle |  |  |  |

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| 3 | Minimize the Surface Area of a Square-Based  Prism |  |  |
| 4 | Maximize the Volume of a Square-Based  Prism |  |  |
| 5 | Maximize the Volume of a Cylinder |  |  |
| 6 | Minimize the Surface Area of a Cylinder |  |  |
| 7 | Review |  |  |
| 8 | Test and/or Performance Task |  |  |
| 1, 2&3 | EQAO Practice Materials |  |  |
|  | EQAO Assessment (10% of Final Mark) | | |