

Mathematics

Grade 10, Academic, MPM2D (2005)

Addendum to Principles of Mathematics

In September 2021, the ministry implemented a de-streamed Grade 9 mathematics course (MTH1W). Students who have earned a credit in this course are well prepared for success in Grade 10 mathematics.

To support students in their transition from MTH1W to MPM2D, the ministry is issuing this addendum to MPM2D, effective September 2022. It includes **three new specific expectations** under an existing overall expectation. As set out on page 38 of *Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools* (2010), all specific expectations must be accounted for in instruction and assessment, but evaluation focuses on students' achievement of the overall expectation.

Analytic Geometry

Existing Overall Expectation

By the end of this course, students will:

- model and solve problems involving the intersection of two straight lines.

New Specific Expectations

By the end of this course, students will:

- identify the relationship between the slopes of parallel and perpendicular lines, and use this relationship to solve related problems;
- develop the formula for the slope of a line (i.e., $m = \frac{y_2 - y_1}{x_2 - x_1}$), and use this formula to determine the equations of lines, given information about the lines (e.g., a graph of a line, a table of values, the coordinates of two points);
- represent the equations of lines in different forms (e.g., $y = mx + b$, $Ax + By + C = 0$, $Ax + By = D$) and translate between these forms, as appropriate for the context.

Some Considerations for Program Planning for MPM2D

Students who have earned a credit in de-streamed Grade 9 Mathematics (MTH1W) will bring with them supplementary learning compared to Grade 9, Academic (MPM1D). The chart below highlights this learning as it relates to the strands in MPM2D.

Strands in MPM2D	Related Learning in MTH1W
Quadratic Relations of the Form $y = ax^2 + bx + c$	<p>In MTH1W, students:</p> <ul style="list-style-type: none">• represented and described characteristics of non-linear relations;• collected and analysed data involving non-linear relations;• translated, reflected, and rotated lines defined by $y = ax$;• evaluated powers involving integer exponents;• compared algebraic expressions using various methods, including simplification.
Analytic Geometry	<p>In MTH1W, students:</p> <ul style="list-style-type: none">• solved linear systems using the algebraic method of comparison in addition to the graphical method;• analysed the effects that positive and negative signs have on the value of rates in various contexts, including rates of change;• identified lines defined by equations and regions defined by inequalities;• analysed geometric relationships including properties of circles and triangles.
Trigonometry	<p>In MTH1W, students:</p> <ul style="list-style-type: none">• solved problems involving real-life applications of proportions in various contexts, including geometry.