

Data Management Mathematics 12 •

MDM-4U

University Prep

The Ontario Curriculum Grades 11 and 12 Mathematics 2007

Mathematics • Malvern C.I. • Toronto District School Board

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Course developed by: Ashley Fullbrook and Karan Parmar Naples • Revised: September 2021

Credit Value: 1

Course Content

Description • *This course broadens students' understanding of mathematics as it relates to managing data. Students will apply methods for organizing and analyzing large amounts of information; solve problems involving probability and statistics; and carry out a culminating investigation that integrates statistical concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. Students planning to enter university programs in business, the social sciences, and the humanities will find this course of particular interest.*

Prerequisite • Grade 11 Functions (MCR3U) or
• Grade 11 Functions and Applications (MCF3M)

Resource Materials • *Mathematics of Data Management* (McGraw-Hill Ryerson, 2002)
• Microsoft Excel
• Fathom 2
• TI-83+ Graphing Calculator

Overall Goals By the end of this course, students will:

- solve problems involving the probability of an event or a combination of events for discrete sample spaces;
- solve problems involving the application of permutations and combinations to determine the probability of an event;
- demonstrate an understanding of discrete probability distributions, represent them numerically, graphically, and algebraically, determine expected values, and solve related problems from a variety of applications;
- demonstrate an understanding of continuous probability distributions, make connections to discrete probability distributions, determine standard deviations, describe key features of the normal distribution, and solve related problems;
- demonstrate an understanding of the role of data in statistical studies and the variability inherent in data, and distinguish different types of data;
- describe the characteristics of a good sample, some sampling techniques, and principles of primary data collection, and collect and organize data to solve a problem;
- analyze, interpret, and draw conclusions from one- and two-variable data using numerical and graphical and algebraic summaries;
- demonstrate an understanding of the applications of data management used by the media and the advertising industry and in various occupations;
- design and carry out a culminating investigation* that requires the integration and application of the knowledge and skills related to the course expectations;

- communicate the findings of a culminating investigation* and provide constructive critiques of the investigations of others.

** This culminating investigation allows students to demonstrate their knowledge and skills from this course by addressing a single problem on probability and statistics or by addressing two smaller problems, one on probability and the other on statistics.*

Major Units	• Organized Counting/Factorials and Permutations	• Statistics of Two Variables
	• Combinations	• Probability
	• Tools for Data Management	• Probability Distributions
	• Statistics of One Variable	• The Normal Distribution

Assessment, Evaluation and Reporting

- Strategies**
- Students will learn in a variety of ways: independently, cooperatively, through hands-on activities, through inquiry, through teacher-led examples followed by practice, etc. Where possible, learning and teaching will be embedded in a rich context to help students relate mathematics and problem solving to other disciplines and the real world.

Achievement Category Weightings	Knowledge/Understanding	Thinking	Communication	Application
	30%	30%	20%	20%

- Term Grades throughout the Semester**
- The grade for each reporting period is based on evaluations that have been conducted to that point in the course, and will be preliminary and tentative. They will be based on the most consistent level of achievement to that point in time, but some of the overall expectations, strands, and units will not have been addressed. The student's grades will most likely change when his/her entire work is evaluated at the end of the course.

- Course Work**
80% of course grade
- Components of Evaluations (refer to Evaluation Plan for details):
Tests, Mini-tests, Assignments, Culminating Project
 - Students need to demonstrate achievement of overall course expectations
 - Missed or incomplete assignments will have an impact on the final grade when a significant number of curriculum expectations have not been evaluated.

- Course-Culminating Activities**
20% of course grade
- *Summative Evaluation: Final Presentation (5%) and Project 15%)*
 - All students must take part in the summative evaluations.

- Learning Skills**
- Learning skills play a critical role in the achievement of curriculum expectations and student success.
 - Students are expected to be academically honest by submitting their own original work. The marks they receive are intended to reflect their own academic achievement.
 - Please refer to *Malvern Mathematics Policy for Learning Skills* for more details.

Communication

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- Consultation**
- The phone number for the MCI Mathematics department is: **(416) 393-1480, extension 20080**.
 - Homework updates, evaluation dates, and additional resources from each teacher's website.

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- Help**
- Please approach your teacher to make arrangements for extra help in the morning, at lunch, or after school. Teacher availability is indicated on signs posted in every math classroom, outside the math classroom doors, and outside the **Math Office, Rm 107**.
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