

Mathematics 30-1 (Pre-Calculus 12)

Teacher Contact Information

Mr. Deo	Room 1243	madev@cbe.ab.ca
Mrs. Ponnuchamy	Room 1247	suponnuchamy@cbe.ab.ca
Mr. Ziendien	Room 1246	alziendien@cbe.ab.ca

Course Description and Objectives

Mathematics is one way of understanding, interpreting and describing our world. It has application in the sciences, economics, business, engineering, medicine, the trades and daily life just to name a few areas. The main goals of mathematics education are to prepare students to:

- Solve problems and communicate and reason mathematically
- Make connections between mathematics and its applications
- Become mathematically literate and appreciate and value mathematics

Students who have met these goals will have gained an understanding and appreciation of the role of mathematics in society, exhibit a positive attitude toward mathematics and engage with and persevere in mathematical problem solving. In order to assist students in attaining these goals, teachers will provide opportunities for students to take risks, think independently, share and communicate their mathematical understanding and exhibit curiosity about mathematics and the disciplines broader applications to the real world.

The Mathematics 30–1 course contains topics and outcomes, as specified in the program of studies, that will provide students with the knowledge base, mathematical understandings, and critical-thinking skills identified for entry into post-secondary programs that require the study of calculus. In Mathematics 30–1, algebraic, numerical, and graphical approaches are used to solve problems. Technology is used to enable students to explore and create patterns, examine relationships, test conjectures, and solve problems.

Students are expected to communicate solutions clearly and effectively when solving both routine and non-routine problems. Students are also expected to develop both conceptual and procedural understandings of mathematics and apply them to real-life problems. It is important for students to realize that it is acceptable to solve problems in different ways, using a variety of strategies.

Course Assessment

Over the course of the 2023-2024 school year, Nelson Mandela High School teachers will maintain an online course presence containing materials, resources, assignments and supports through our D2L environment. It is important for students to take an active role in their learning and stay current in their schoolwork if away for any reason.

Competencies

The competencies listed below will be assessed as part of the outcomes shown in the next section.

Competency	Descriptor
Solve Problems and Think Critically and Creatively	Students use these competencies when they are faced with problems that do not have clear solution strategies or they are asked to complete non-routine tasks. Evidence of these competencies will be found in the following activities: daily tasks, quizzes, projects, cumulative exams or challenges, etc.
Communicate Effectively	Clear and effective communication helps students to explain and justify their reasoning and problem solving when presenting mathematical solutions. Communication takes place verbally or in written form on various assessments (as listed above).

Outcomes

The specific outcomes from the Alberta Education Mathematics Grades 10 – 12 Program of Studies will account for 90% of each student's school awarded grade. The other 20% will come from a Cumulative Exam. These outcomes (and the associated competencies) will be assessed using the Nelson Mandela Assessment Rubric. Teachers may use a variety of assessments including quizzes, assignments, projects, exams, and one-on-one conversations to provide multiple opportunities for students to demonstrate their understanding of each of the specific outcomes.

Units and Outcomes		
Nelson Mandela Outcomes	PowerSchool Outcomes	PowerSchool Weightings
<u>Relations and Functions</u>		
RF1: Function Transformations (Stretches, Reflections & Translations)	RF2/3 Transformation	4%
	RF4 Applying Transformations	4%
	RF5 Reflect	4%
	RF6 Inverses	4%
RF2: Graph and Analyze Radical Functions	RF13 Radical Functions	4%
RF3: Graph and Analyze Rational Functions	RF14 Rational Functions	5%
RF4: Exponential and Logarithmic Functions (Understanding Logs, Log Laws, Graph & Analyze Exp. & Log Functions) Problem Solving involving Exponential & Logarithmic Equations	RF8 Log Laws	5%
	RF7/9 Exponent & Log Functions	10%
	RF10 Exponent & Log Equations	7%
RF5: Polynomial Functions (Factor, Graphs & Analyze)	RF11/12 Poly Functions	9%
RF6: Function Operations	RF1 Operations Functions	4%
<u>Trigonometry</u>		
T1: Angles and the Unit Circle	T1/2/3 Trig Ratios	8%
T2: Problem Solving using Trig Equations	T5 Trig Equations	5%
T3: Graph and Analyze Trig Functions	T4 Trig Functions	7%
T4: Prove Trig Identities	T6 Trig Identities	5%
<u>Permutations, Combination, and Binomial Theorem</u>		
C1: Fundamental Counting Principle and Permutations & Combinations, Binomial Theorem	PC1/2/3 Perms and Combs	10%
	PC4 Binomial Theorem	5%

Note that the order of the outcomes listed above does not correspond to the order in which the topics will be taught in class. For more detailed information about the specific outcomes from the Mathematics Program of Studies, please follow the link: [Math 30-1 Program of Studies](#)

Final Evaluation

A student's final grade in the course will be a blend of the school awarded mark, with a weight of 70%, and the Provincial Diploma Exam mark, with a weight of 30%. The Diploma Exam will take place on **Monday, January 15th from 9:00 am to 3:00 pm**. The following outcomes will be examined on the diploma exam:

Diploma Exam Content	Percentage Emphasis
Relations and Functions	55%
Trigonometry	29%
Permutations, Combinations, and Binomial Theorem	16%

Course Materials and Resources

Students will have access to the Pre-Calculus 12 textbook in class and will require lined and graph paper, pencils, and erasers. Students will also **require** an approved graphing calculator. We recommend the Texas Instruments TI-83+ or 84 or Casio fx-9750 GIII and classroom instruction will be given for **this models only. Please check with your teacher for more information.**

Optional Resource: Students may *choose to purchase* the Absolute Value Pre-Calculus 12 Workbook from the school for a fee (this workbook is not required and students will still have access to the Pre-Calculus Textbook free of charge).

Plagiarism

When ideas are taken from other sources without giving credit, this is known as plagiarism. Plagiarism is the unacknowledged or unauthorized use of somebody else's words or ideas, **including AI-generated material**. We expect our students to act with academic integrity, and to use their own knowledge to demonstrate authentic learning. Student honesty and ethical behaviour is foundational to their schoolwork and in how they handle challenges. Our teachers support students' authentic and ethical learning through teaching when and how to cite resources.

When To Give Credit in Your Work

- When you are using or referring to somebody else's words or ideas from a magazine, book, newspaper, song, TV program, movie, web page, computer program, letter, advertisement, AI application or any other source.
- When you use information gained through interviewing another person.
- When you copy the exact words from somewhere.
- When you reprint any diagrams, illustrations, charts, and pictures.

Don't Need to Give Credit

- When you are writing your own experiences, your own observations, your own insights, your own thoughts, your own conclusions about a subject.
- When you are using common knowledge, common sense observations, or shared information.
- When you are using generally accepted facts.
- When you are writing up your own experimental results.

Academic Expectations

Students are expected to behave according to the CBE [Student Code of Conduct](#). Students who knowingly misrepresent the work of others as their own, or allow their work to be copied, act outside of the parameters of academic integrity. If this happens, we use [Progressive Student Discipline](#) so that teachers, parents, and school leaders can help students take responsibility for their learning to achieve their academic goals.

(<https://school.cbe.ab.ca/school/cbe-learn/teaching-learning/program-approach/academic-integrity/Pages/default.aspx>)