CATHOLIC DISTRICT SCHOOL BOARD OF EASTERN ONTARIO
ST. THOMAS AQUINAS CATHOLIC HIGH SCHOOL

FUNCTIONS 11 – UNIVERSITY PREPARATION (MCR3U)
2019 – 2020

TEACHER: Mr. Warner

CREDIT VALUE: 1.0

PREREQUISITE: MPM2D (Grade 10 Academic Mathematics)

TEXTBOOK: Nelson Functions 11, Ontario Edition

MINISTRY DOCUMENT: The Ontario Curriculum, Grades 11 and 12; Mathematics, Revised 2007.

COURSE DESCRIPTION

This course introduces the mathematical concept of the function by extending students' experiences with linear and quadratic relations. Students will investigate properties of discrete and continuous functions, including trigonometric and exponential functions; represent functions numerically, algebraically, and graphically; solve problems involving applications of functions; investigate inverse functions; and develop facility in determining equivalent algebraic expressions. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

OVERALL EXPECTATIONS

The Ontario Curriculum Grades 11 and 12: Mathematics identifies overall expectations, which describe in general terms the knowledge and skills that students are expected to demonstrate by the end of this course. This course is broken down into four different strands: characteristics of functions, exponential functions, discrete functions and trigonometric functions.

For the following strands, it is expected that students will:

Characteristics of Functions

✓ demonstrate an understanding of functions, their representations, and their inverses, and make connections between the algebraic and graphical representations of functions using transformations;

✓ determine the zeros and the maximum or minimum of a quadratic function, and solve problems involving quadratic functions, including problems arising from real-world applications;

✓ demonstrate an understanding of equivalence as it relates to simplifying polynomial, radical, and rational expressions.

Exponential Functions

✓ evaluate powers with rational exponents, simplify expressions containing exponents, and describe properties of exponential functions represented in a variety of ways;

✓ make connections between the numeric, graphical, and algebraic representations of exponential functions;

✓ identify and represent exponential functions, and solve problems involving exponential functions, including problems arising from real-world applications.

Discrete Functions

✓ demonstrate an understanding of recursive sequences, represent recursive sequences in a variety of ways, and make connections to Pascal's triangle;

✓ demonstrate an understanding of the relationships involved in arithmetic and geometric sequences and series, and solve related problems;

✓ make connections between sequences, series, and financial applications, and solve problems involving compound interest and ordinary annuities.

Trigonometric Functions

✓ use their knowledge of ratio and proportion to investigate similar triangles and solve problems related to similarity;

✓ solve problems involving right triangles, using the primary trigonometric ratios and the Pythagorean theorem;

✓ solve problems involving acute triangles, using the sine law and the cosine law.

EVALUATION OF STUDENT ACHIEVEMENT

Each student will be given a variety of opportunities to demonstrate the extent to which she / he have met the expectations of this course. Her / his final grade will be a percentage that represents the student's overall achievement of curriculum expectations based on her / his most consistent level of achievement.

70% Summative Assessments throughout the semester based on all four categories of the Achievement Chart

30% Final Culminating Assessment(s) including exam*

*Each student must complete all final assessments in order to be eligible to receive the credit. The final culminating assessments will include a culminating performance task and their final exam.

Please note that any outstanding assignments / tests **MUST be submitted prior to the completion of each unit,** otherwise a mark of zero may be given.

One of the goals of any course is the development of the learning skills and work habits you will need to succeed in the workforce and in life. Your learning skills and work habits **(*Responsibility*, *Organization*, *Independent Work*, *Collaboration*, *Initiative*, *and Self-Regulation*)** will be assessed throughout the semester and will be recorded (separately from your grade) on your report card as follows:

E – Excellent   G – Good   S – Satisfactory   N – Needs Improvement

The development of these skills is essential as they are critical for success in the later grades, post secondary education and / or the workplace. To that end, the students will be shown various strategies and provided encouragement throughout the semester to aid in their skill development.

POLICIES AND EXPECTATIONS FOR THE STUDENT

General Expectations for this Course

✓ **Be wrong – often!** Taking risks when problem solving is critical for success.

✓ **Be on time** and fully prepared for each class.

✓ **Participate actively** in class by asking questions and sharing your ideas and knowledge.

✓ **Demonstrate respect, responsibility, and a positive attitude** at all times – to your peers, your teacher, and yourself. Remember where you are and what you are trying to achieve. Appropriate language, clothing, and participation are expected each day of the semester.

✓ Maintain a **quiet, productive learning environment** by focusing on tasks, staying seated, and raising your hand to speak. Interrupting the thinking and work of others is not acceptable.

✓ **Be proactive** - YOU are responsible for your achievement in this class. Completing all course work is essential for success. Take advantage of the extra help offered at lunch and let me know as soon as concerns arise - solutions can always be found together!

✓ **No use of cellular phones / electronics / texting in class**. Students are asked to leave their electronics in their locker. If they bring their electronics to class, they are expected to put them in the designated box at the front of the class. Failure to follow these procedures may result in a detention.

Course Materials and Resources

REQUIRED TEXTS   Nelson – Functions 11

REQUIRED MATERIALS   3-ring binder with dividers
                        pencils and eraser(s)
                        blue or black pen and red or different coloured pen/pencils
                        highlighter
                        graph paper (Cartesian) and ruler
                        scientific calculator (using smart phones as calculators is NOT permitted.)

Notebooks

A separate 3-ring binder with four dividers is required for this course. It is recommended that the content of your binder be organized as follows:

- ✓ course outline sheets
- ✓ class notes/work and homework organized by unit and date (Divider 1)
- ✓ all quizzes, tests, and other assessments *with corrections* (Divider 2)
- ✓ study notes and miscellaneous (Divider 3)

Tests, Quizzes, Assignments, and Performance Tasks

You will be given reasonable notice for all summative assessments (marks count). Formative assessments (marks do not count) may be given at any time to assess your progress during a particular unit of study. All assignments must be completed neatly and accurately for the assigned due date**.** Be sure to demonstrate clear, precise communication skills as well as your depth of understanding of concepts in all work.

A **parent signature** will be required for all summative work (and, at times, for formative work as well).

Homework

All work is to be completed in pencil on clean lined paper or graph paper as required. Homework must be completed by the next class day (*including checking answers*). All incorrect solutions should be corrected. Come to class ready to ask questions - it is your responsibility to seek assistance when you have encountered difficulty with assigned work. Asking questions is part of learning! There will be homework on a regular basis in this course.

*Please note: Homework will be checked regularly for the 1ˢᵗ month or so, then it will be **the student's responsibility to stay caught up.** This is meant to help prepare them for the post-secondary path they are on.*

Attendance

The attendance philosophy of St. Thomas Aquinas Catholic High School reflects our belief that your daily participation in the classroom learning experience is an integral part of the learning process. Prompt, regular attendance with all required materials and completed work on hand is a requirement for this course. If you are absent, it is your responsibility, on your own time, to update your notes, prepare for tests, etc

It is up to you to see the teacher and make arrangements for any **missed tests or in-class assignments.** You should be prepared to write any missed test or in-class assignment on the day you return to school, during your lunch time.

Cheating and Plagiarism

Cheating includes things like copying homework, projects, looking at someone else's test, using cheat notes and opening textbooks during tests. This also includes copying someone else's words and using them for your own. Work will be checked for plagiarism. Use references for paraphrased work. Refer to your agenda for the consequences.

A Note About Extra Help

There are many opportunities for you to receive extra assistance with your course work or build upon/explore other concepts and skills. I am available regularly at lunch. **It is very important that you seek assistance with difficulties as soon as they arise**. Asking questions is part of learning anything!

Buddy System

Since each of us is away occasionally, it is recommended that you choose a buddy in the class who can help you stay up to date. In turn, you will be this person's buddy. When your buddy is absent, you should: (a) pick up an extra copy of any handouts and put your buddy's name and the date on them; (b) keep clear, legible notes for your buddy to copy; (c) take note of any special announcements made in class regarding assignments or tests; and (d) contact your buddy at home if there are any special messages (only in rare circumstances). *** If you miss class it is <u>your responsibility</u> to catch up on your own time and to pick up information and handouts from your buddy. ***

Buddy's Name: _____   Phone Number: _____

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2019 – 2020

September 2019

Dear MCR3U Parent/Guardian

I am very pleased to be your child's mathematics teacher this semester. If at any time you have questions about the course or your child's progress, **please do not hesitate to contact me.** I check my email daily and therefore that may be the easiest method of contacting me, however you may also phone me if you wish. If I am unavailable when you call, leave a message and I will contact you as soon as possible. It is important to deal with questions and concerns immediately so that solutions can be found together.

I will be using a combination of Microsoft Teams and OneNote for our class, which are part of the Office 365 platform that all students have access to. The following will be posted on-line for all units: completed class notes, homework, learning goals, videos, unit review and any other pertinent assignment handouts. Please encourage your daughter / son to access this resource as soon as possible to ensure that any login and access issues are corrected early in the semester.

My goal for your daughter / son this year is success. I evaluate success not only in terms of grades, but also in the development of the "mathematical confidence" needed to succeed in mathematics and our fast changing world.

Students will be evaluated in four areas that include:

Knowledge / Understanding: Usually students find these questions easiest as they test their basic knowledge on a subject

Communication: As a mathematics teacher I also take responsibility for the literacy skills our students, and communication is a big part of this. These questions provide an opportunity for the students to clearly communicate their understanding of concepts using words, diagrams etc. Mathematical form (proper layout and use of math symbols) is an important part of communication and will be marked on every assessment.

Application: These questions will test the students on how they apply their knowledge in real life situations.

Thinking / Inquiry: These questions link together various ideas from the unit, or other units. These are traditionally the more difficult questions.

All four types of questions will be used regularly to check the student's progress.

Some other things you can do to help your daughter / son to succeed in mathematics:

• Schedule a regular "homework time" and provide them with a quiet area to work that is free of distractions such as Snapchat, Instagram, Tik Tok, and X-Box.

• Ensure that your daughter / son are **verifying their solutions** against those in the back of the textbook. I will be reiterating to the students that doing homework, and not verifying correctness, is counterproductive and not good use of their time.

• Ask how her / his quizzes, skills homework and formal projects or assignments are going.

• Offer to work on a problem together, or work with them to review concepts and calculations.

• Encourage them to communicate their findings and understanding clearly and concisely (mathematical form)

Please provide the information requested below, sign, and return this form to confirm that you have received and read this letter and to also confirm the following:

- **I have read the course outline and understand the curriculum, procedural, and evaluation expectations of this course.**

- **I am aware of the Microsoft Teams / OneNote site for this class and that I should set up notifications for new postings to the site.**

Please provide an email address that you check regularly. My main method of communication regarding your daughter / son will be done via email.

Student Name: _____

Student Signature: _____

Parent / Guardian Contact Name: _____

Parent / Guardian Email address: _____

Home Phone / Work Phone: _____

Parent/Guardian Signature: _____

Additional comments:

Is there anything special I might need to know?

Sincerely,

Cory Warner

Phone: 613-445-0810
Email: cory.warner@cdsbeo.on.ca