

MATH 20-1A, Mathematics 20-1*5 credits, 6 hours lecture*

Topics covered include oblique triangle trigonometry; perform all operations (addition, subtraction, multiplication, division) on radicals and rational expressions; solve radical, rational & quadratic equations; analyze & solve applications involving arithmetic & geometric sequence & series; graph, analyze and apply quadratic, absolute value & reciprocal functions; solve systems involving both linear and quadratic equations; graph, analyze and solve linear and quadratic inequalities.

Alberta Education Course Equivalency: Math 20-1

Prerequisite: Math 10, Math 10C, or Math 20-2, or permission from the Program Chair

Instructor

Tracy Boger
Office: S213F
Phone: 780-791-4833
tracy.boger@keyano.ca

Office Hours

By appointment

Hours of Instruction

Monday	10:00 – 11:50
Wednesday:	10:00 – 11:50
Friday	10:00 – 11:50

Required Resources

Pre-Calculus 11 (McGraw-Hill Ryerson): Author: Bruce McAskill et al ISBN:0-07-073873-4

Other supplies: TI83 or TI84 plus calculator (Available from Staples)

Course Outcomes

Upon successful completion of the course, the student shall be able to:

Trigonometry

- Demonstrate an understanding of angles in standard position $[0^\circ$ to $360^\circ]$.
- Solve problems, using the three primary trigonometric ratios for angles from 0° to 360° in standard position.
- Solve problems, using the cosine law and sine law

Quadratics

- Analyze quadratic functions of the form $y = a(x - p)^2 + q$ and determine the:
 - Vertex
 - domain and range
 - direction of opening
 - axis of symmetry, x- and y-intercepts
- Analyze quadratic functions of the form $y = ax^2 + bx + c$ to identify characteristics of the corresponding graph, including:
 - Vertex
 - domain and range
 - direction of opening
 - axis of symmetry
 - x- and y-intercepts
- Analyse quadratic functions using transformations
- Convert quadratic functions from standard form to vertex form
- Factor quadratic expressions
- Solve quadratic equations by factoring, completing the square, quadratic formula

Radical Expressions and Equations

- Solve problems that involve operations on radicals and radical expressions with numerical and variable radicands.
- Solve problems that involve radical equations (limited to square roots).

Rational Expressions and Equations

- Determine equivalent forms of rational expressions
- Perform operations on rational expressions
- Solve problems that involve rational equations

Absolute value and Reciprocal Functions

- Demonstrate an understanding of the absolute value of real numbers
- Graph and analyze absolute value functions to solve problems.
- Graph and analyze reciprocal functions

Systems of Equations and Inequalities

- Solve, algebraically and graphically, problems that involve systems of linear-quadratic and quadratic-quadratic equations in two variables.

Linear and Quadratic Inequalities

- Solve problems that involve linear and quadratic inequalities in two variables.
- Solve problems that involve quadratic inequalities in one variable

Evaluation

Unit Assignments	30%
Unit Tests	24%
Weekly Quizzes	18% (approx. 1.5 % each)
Homework Practice	3% (textbook practice completion checks)
Final Exam	25%

Schedule of Topics

Please Note: Date and time allotted to each topic is subject to change.

Week	Topics to be Covered
1	Course Intro Trig, Angle, Algebra and Problem Solving Review
2	2.1 Angles in standard Position 2.2 Trig Ratios of Any Angle
3	2.3 Sine Law 2.4 Cosine Law (Quiz: 2.1-2.2) 3.1 Quadratic Functions in Vertex Form (Ch2 Assignment)
4	3.2 Quadratic Standard in Standard Form 3.3 Completing the Square Exam CH2
5	4.1 Graphing Quadratic Equations 4.2 Factoring Quadratic Equations 4.3 Solving By completing the Square (Quiz: CH3)
6	4.4 The Quadratic Formula 5.1 Radicals Intro Factoring Quiz: CH4 5.2 Multiplying and Diving by Radicals (Ch3/4 Assignment)
7	5.3 Radical Equations Exam CH3/4
8	6.1 Rational Expressions 6.2 Multiplying and Dividing Rational Expressions Quiz: CH5
9	6.3 Adding and Subtracting Rational Expressions 6.4 Rational Equations Review Class Quiz: CH6 Ch5/6 Assignment
10	8.1 Graphing Systems of Inequalities 8.2 Solving Systems of inequalities Algebraically Exam Ch5/6
11	9.1 Linear Inequalities in two variables
12	9.2 Quadratic Inequalities in one variable 9.3 Quadratic Inequalities in two variables Review Class CH8 Quiz CH8/9 Assignment
13	7.1 Absolute Value 7.2 Absolute Value Functions Exam Ch8/9
14	7.3 Absolute Value Equations 7.4 Reciprocal Functions Review day Ch7 Quiz
15	Final Exam Week Dec 8- 19

Grading System

The minimum pre-requisite for progression is **60%** (refer to Grading System below)

Descriptor	4.0 Scale	Percent
Excellent	4.0	96 – 100
	4.0	90 – 95
	3.7	85 – 89
Good	3.3	81 – 84
	3.0	77 – 80
	2.7	73 – 76
Satisfactory	2.3	69 – 72
	2.0	65 – 68
	Minimum Prerequisite	60 – 64
Poor	1.3	55 – 59
Minimum Pass	1.0	50 – 54
Failure	0.0	0 – 49

Course Policies and Procedures

Assignments. Assignments will consist of end of unit homework assignments and in-class textbook exercises. Daily in-class textbook practice will be graded for completion every Monday. Check the course schedule for homework assignment due dates.

Assignment Submission. All assignments must be submitted via the moodle assignment drop box as a single PDF file (submit only one file per assignment). If you need help formatting your assignment, make an appointment with the college's educational support specialist (located in the library).

Participation Marks. Participation marks will be awarded based on the completion of daily textbook practice assignments. Textbook practice assignments will be submitted every Monday via the moodle dropbox. Simply attending class does not secure full participation marks.

Late assignments. Students will lose 10% each day that an assignment is late until the fourth day. On day 5 the late assignment be REFUSED. Returned late assignments may have minimal feedback. If written feedback is important to you make sure that you submit assignments on time. If you are unable to meet assignment deadlines contact your instructor 24 hours prior to the due date. Requests for extensions after the due date will not be considered unless there are extenuating circumstances

Midterm Exam. A missed exam may be written at an alternate time only under certain exceptional circumstances and *at the instructor's discretion*. The instructor should be contacted within 24 hours of the scheduled exam, and acceptable documentation (e.g. a doctor's note) must be provided.

Final Exam. The final exam schedule and policy is available on the Keyano College website. It is your responsibility to be familiar with final exam policy. Final exams must be written on the date scheduled by the College. If there are extenuating circumstances the procedure for "Deferred Final Examination" in the Credit Calendar is to be followed.

Please avoid scheduling appointments during class time. Assignments and exams will not be excused or omitted due to missing class for personal appointments. This includes routine medical appointments, volunteer or work commitments, and college related appointments. However, if you have extenuating circumstances, contact your instructor.

Electronic Devices. Students should only engage in the use of personal laptop computers, tablets or iPads, and/or cellphones for course related purposes. The use of these devices for anything that is not course related is prohibited. Cellphones and tablets are strictly prohibited during quizzes and exams.

Make-up assignments and Extra Credit will NOT be given in this course.

Performance Requirements and Student Services

Student Responsibilities

As a student, it is your responsibility to contact the Office of the Registrar to complete the required forms, including the Withdraw Course or Program or a Change of Registration form. Please refer to the important dates listed in the Academic Schedule in the [Keyano College credit calendar](#). The Keyano College credit calendar also has information about Student Rights and the Code of Conduct. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and the Code of Conduct Policies.

Student Attendance

Class attendance is helpful for two reasons: First, class attendance maximizes a student's learning experience. Second, attending class is an excellent way to keep informed of matters relating to the course administration (e.g., the timing of assignments and exams). Ultimately, you are responsible for your learning and performance in this course. It is the responsibility of each student to be prepared for all classes. Absent students are responsible for the material covered in those classes, and students must ensure they are ready for their next class, including completing any missed assignments and notes.

Assignments

Assignments must be submitted by the due date. Assignments handed in late may be graded without additional comments and will lose 10% per day until the 4th day. On the 5th day it will be REFUSED. Technical problems will NOT exempt students from the late penalty so plan accordingly. Computer failure is rarely considered an acceptable reason for granting an extension, and a conflict of deadlines is never an acceptable reason. If you are unfamiliar with technology, make sure that you access the student support that is available prior to the assignment due date. If you need an extension, you must ask at least one full day in advance of the due date (min 24 hours) otherwise the request will likely be denied. Extensions will only be considered if there are extenuating circumstances which can be verified. Assignments cannot be resubmitted so please refrain from asking.

Academic Misconduct

Students are considered responsible adults and should adhere to the principles of intellectual integrity. Intellectual dishonesty takes many forms:

- Plagiarism or the submission of another person's work as their own,
- The use of unauthorized aids in assignments or examinations (cheating),
- Collusion or the unauthorized collaboration with others in preparing work,
- The deliberate misrepresentation of qualifications,
- The willful distortion of results or data,
- Substitution in an examination by another person,
- Submitting unchanged work for another assignment, and
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Code of Conduct Policies. To ensure your understanding of plagiarism, you may be required to complete the online [Understanding Plagiarism tutorial](#) and submit the certificate of completion.

Online Learning

This is a face to face course. If we are required to move to online learning due to COVID, technology and internet connectivity will impact your online learning experience. You may be required to watch online videos, take online quizzes, or participate in live online classes. Live/virtual courses will be hosted in Microsoft Teams or Zoom. For all course delivery types, you will access your course resources on Keyano's learning management system: Moodle (iLearn). Login in using your [Keyano username and password](#). Keyano College operates in a Windows-based environment and having access to the correct tools for online learning is essential. Here's a list of recommended system requirements.

Internet Speed

Minimum download and upload speeds of 10 Mbps. Recommended download speeds of 25 Mbps and upload speeds of 10 Mbps (if you are sharing your internet at home). You can check your internet speed with [Speedtest by Ookla](#).

Computer System Requirements

Microsoft Windows	Apple (Mac)
<p>Minimum Requirements:</p> <ol style="list-style-type: none"> Windows 10 Operating System or above 4GB of RAM 10GB available hard drive storage space <ol style="list-style-type: none"> Install the Microsoft Office 365 suite (~3GB) * Microphone, webcam, and speakers (All modern laptops have these three accessories built-in.) Windows has built-in anti-virus/malware software. It is essential to install system updates to keep your device secured regularly. <p>*Microsoft Office 365 is free to Keyano students.</p>	<p>Minimum Requirements:</p> <ol style="list-style-type: none"> Mac Operating System 10.14 (Monterey) or above 4GB of RAM 10GB available hard drive storage space <ol style="list-style-type: none"> Install the Microsoft Office 365 suite (~3GB) * Microphone, webcam, and speakers (All modern laptops have these three accessories built-in.) Mac has built-in anti-virus/malware software. It is important to install system updates to keep your device secured regularly. <p>*Microsoft office 365 is free to Keyano students.</p>
<p>Recommended Upgrades</p> <ul style="list-style-type: none"> 8GB of RAM Regularly back up or synchronize your files, locally or with a cloud-based storage option. <p>OneDrive is the cloud-based storage option free to students after the setup of KeyanoMail and Microsoft 365.</p>	<p>Recommended Upgrades</p> <ul style="list-style-type: none"> 8GB of RAM Regularly back up or synchronize your files locally or with a cloud-based storage option. <p>OneDrive is the cloud-based storage option free to students after the setup of KeyanoMail and Microsoft 365.</p>
<p>Tablets, iPads, and Chromebooks are not recommended: they may not be compatible with the testing lockdown browsers and Microsoft Office 365.</p>	

Computer Software

Students have access to Microsoft Office 365 and Read&Write for free using Keyano credentials.

Recording of Lectures and Intellectual Property

Students may only record a lecture if explicit permission is provided by the instructor or Accessibility Services. Even if students have permission to record a lecture or lecture materials, students may not share, distribute, or publish any of the lectures or course materials; this includes any recordings, slides, instructor notes, etc., on any platform. Thus, no student is allowed to share, distribute, publish or sell course-related content without permission. It is important to recognize that the Canadian Copyright Act contains provisions for intellectual property. The [Academic Integrity Policy](#) provides additional information on Keyano College's expectations from students as members of the intellectual community.

ITS Helpdesk

If you have issues with your student account, you can contact the ITS Helpdesk by emailing its.helpdesk@keyano.ca or calling 780-791-4965.

COVID-19 We are subject to provincial, and municipal bylaws, and policies. These decisions may change pending further direction from the Alberta Chief Medical Officer, Alberta Health Services, and other provincial guidelines. To protect yourself and others, get immunized, wash your hands, wear a mask, keep your distance (2m/6 ft) and remain home when feeling unwell. For the most recent COVID-19 information, please refer to albertahealthservices.ca/COVID.

Specialized Supports The Student Services Department is committed to Keyano students and their academic success. There is a variety of student support available at Keyano. All student services are available during Keyano business hours: Monday to Friday, 8:30 a.m. to 4:30 p.m. The College is closed on statutory holidays. If you require support outside of regular business hours, please inform the support service team, and they will do their best to accommodate your needs.

Accessibility Services provides accommodations for students living with disabilities. Students with documented disabilities or who suspect a disability can meet with an Access Strategist to discuss their current learning barriers and possible accommodations. Students who have accessed accommodations in the past are encouraged to contact the department to request accommodations for the following semester. Please note that requesting accommodations is a process and requires time to arrange. Contact the department as soon as you know you may require accommodations. For accessibility supports and disability-based funding, please book an appointment by emailing us at: accessibility.services@keyano.ca.

Accessibility Services also provides individual and group learning strategy instruction for all students and technology training and support to enhance learning. You can meet with an Access Strategist to learn studying and test-taking strategies. In addition, you can schedule an appointment with the Assistive Technology Specialist to explore technology tools for learning. Book an appointment today by emailing: accessibility.services@keyano.ca

Wellness Services offers a caring, inclusive, and respectful environment where students can access free group and individual support to meet academic and life challenges. Mental Health Coordinators provide a safe and confidential environment for you to seek help with personal concerns. Our Wellness Navigator offers support with basic needs such as housing, financial and nutritional support, and outside referrals when needed. Wellness Services welcomes students to participate in group sessions that address topics including mindfulness and test anxiety throughout the academic year. Individual appointments can be made by emailing wellness.services@keyano.ca.

Library Services: provides students with research, information, and education technology supports as they engage in their studies. Library staff are available to help you online and in person throughout the semester. Librarians offer individual and small group appointments booked using the online [Book A](#)

[Librarian calendar](#). The Library also provides research and subject guides to help you with your studies. To view a subject or course-specific guide, check out the complete list of online [Subject Guides](#). To start your research and access citation guides (APA, MLA, Chicago, or IEEE), visit the [Research Help page](#). The Library's collections (including print and online materials) are searchable using [OneSearch](#). The Library offers a Loanable Technology collection to support students accessing and using technology. For an up-to-date list of technology available for borrowing, visit the Library's [Loanable Technology webpage](#). For a detailed list of library resources and services, go to www.keyano.ca/library. For all inquiries, please email askthelibrary@keyano.ca or [chat with us online](#).

Academic Success Centre: The Academic Success Centre at Keyano College (CC-119) provides **free** academic support services to registered students, such as tutoring, writing support, facilitated study groups, workshops, and study space. Academic Content Specialists are available in Mathematics, Science, Trades, Power Engineering, Upgrading/College Prep, Human Services, English, Humanities, and more. Students are encouraged to visit the Academic Success Centre to discuss study strategies and academic concerns. For additional information, please email Academic.Success@keyano.ca.

Academic Success Coach: The Academic Success Coach is located in the Academic Success Centre and works with students to develop academic success plans, time management skills, study strategies, and homework plans. For additional information, please email Academic.Success@keyano.ca.