

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:**

Tuesday afternoons 1:00 to 3:30 (Drop in)

Friday mornings 9:00 to 11:30 (By appointment)

Hours of Instruction

Monday 1:00 - 2:50 (S218)

Wednesday: 1:00 – 2:50 (S218)

Thursday 1:00 – 2:50 (S218)

Required Resources

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

Scientific calculator or a graphing calculator.

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
- Solve problems that involve quadratic equations
- 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 (limited to numerators and denominators that are monomials, binomials or trinomials).
- Perform operations on rational expressions (limited to numerators and denominators that are monomials, binomials or trinomials).
- Solve problems that involve rational equations (limited to numerators and denominators that are monomials, binomials or trinomials).

Absolute value and Reciprocal Functions

- Demonstrate an understanding of the absolute value of real numbers
- Graph and analyze absolute value functions (limited to linear and quadratic functions) to solve problems.
- Graph and analyze reciprocal functions (limited to the reciprocal of linear and quadratic 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%

The minimum pre-requisite for progression is 1.7 (refer to Grading System below)

Grading System

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	1.7
Poor	1.3	55 – 59
Minimum Pass	1.0	50 – 54
Failure	0.0	0 – 49

Please Note:

Date and time allotted to each topic is subject to change.

Performance Requirements and Student Services**Student Responsibilities**

It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the [Keyano College credit calendar](#). The Keyano College credit calendar also has information about Student Rights and Code of Conduct. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Code of Conduct Policies.

Student Attendance

Class attendance is useful for two reasons. First, class attendance maximizes a student's learning experience. Second, attending class is a good way to keep informed of matters relating to the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and notes that may be due.

Academic Misconduct

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person's work as one's 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;
- Handing in the same unchanged work as submitted 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.

In order to ensure your understanding of the concept of plagiarism, you must successfully complete the online tutorial found on ilearn.keyano.ca. Then print the certificate, sign it, and show it to each of your instructors. Your course work may not be graded until you show this signed certificate.

Specialized Supports

The Student Services Department is committed to Keyano students and their academic success. There are a variety of student supports available at Keyano. Due to the continuing situation with the Covid-19 pandemic, the offered support services will be implemented through a model to respond to the restrictions in force at the time. In-person and virtual services will be offered. All Alberta Health Services guidelines will be followed for in-person appointments—wear a mask, maintain two meters of physical distance, use hand sanitizer, and stay home if you are unwell.

All student services are available during Keyano business hours: Monday to Friday, 8h30-16h30. The College is closed for statutory holidays. If you require support outside of regular business hours, please inform the support service team, and we will do our best to accommodate your needs.

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

Accessibility Services also provides individual and group learning strategy instruction for all students, as well as technology training and supports to enhance learning. Meet with a Learning Strategist to learn studying and test-taking strategies for online classes. 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

offer a safe and confidential environment to seek help with personal concerns. Students may access services virtually and in-person.

Wellness Services welcomes students to participate in any of the group sessions offered throughout the academic year addressing topics including mindfulness and test anxiety.

Individual appointments can be made by emailing wellness.services@keyano.ca.

Library Services: provides students with research and information supports as they engage in their studies. Library staff are available to support you both online and in-person throughout the semester. For a detailed list of library supports and services, go to www.keyano.ca/library. For all inquiries, please email askthelibrary@keyano.ca or chat with us online.

Begin your research with the [Library's FIND page](#). Search for information and sources for your assignments using the OneSearch, the Library's Catalogue, or by searching in a specific database selected from the [A-Z Database List](#).

Individual support with us is available. For support with citations, research and other information needs, appointments can be booked using the online [Book A Librarian Calendar](#). For support with Moodle, educational tools for assignments, Microsoft Office, Zoom, Teams and more, book an appointment using the online [Educational Technology Support Calendar](#).

Research and subject guides are helpful resources when beginning your research, assignment, using new educational technology, or addressing other information needs. To view a subject or course-specific guide, check out the complete listing of online [Subject Guides](#).

To access additional research resources, including Citation Guides (APA, MLA, Chicago, or IEEE), go to the [Research Help Library page](#).

The Loanable Technology collection is available to support students in their learning pursuits, whether online, in person or both. Items available for borrowing include mobile projectors, webcams, noise-cancelling headphones, Chromebooks, and laptops. For an up-to-date list of technology available for borrowing as well as support available, go to the Library's [Loanable Technology webpage](#).

Academic Success Centre: The Academic Success Centre is a learning space in the Clearwater Campus (CC-119) at Keyano College. Students can gather to share ideas, collaborate on projects, get new perspectives on learning from our Academic Content Specialists, or use the Centre's educational resources. The Academic Success Centre provides academic support services to students registered in credit programs at Keyano College in the form of individual tutoring, writing support groups, facilitated study groups, workshops, and study space. Services are **free** to Keyano students.

Academic Content Specialists are available in the areas of Math, Science, Human Services, and English/Humanities. This covers all courses offered at Keyano. The Academic Success Coach can also be found in the Academic Success Centre.

For the most up to date information on how to book a session, please view [the Keyano Academic Success Centre homepage](#).

Academic Integrity: The goal of the Academic Success Centre is to foster a student's ability to learn effectively and independently. Students registered at Keyano College are welcome to drop by the Centre to visit with any of our Academic Content Specialists to discuss their academic concerns.

Availability: Monday to Friday: 8:30 a.m. – 4:30 p.m. Flexible times may be available upon request. Virtual and in-person sessions, please email to get in contact with our Academic Content Specialists. For the most up to date

information on how to book a session, please view the [Academic Success Centre homepage](#).

Academic Success Coach: offers you support and access to resources for your academic success to help you to find the Keys to your Success. The Academic Success Coach will work with you to develop an academic success plan, develop your study and time management skills, and connect you with the right resources here at Keyano. Academic.success@keyano.ca is the best way to access resources during blended service delivery. The Academic Success Coach is located in the Skill Centre in CC-119 at the Clearwater Campus.

E-Learning

Technology and internet will impact your online learning experience. It's important that you can watch an online video and other course materials, take online quizzes and participate in a live class with your instructor and other students. Live/virtual classes 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 the correct tools for online learning is important. Here's a list of recommended system requirements.

Internet Speed

Minimum Internet speeds of 10 Mbps.

Recommended Internet speeds of 25 Mbps (especially if you are sharing your internet at home).

Check your internet speed with Fast.com.

Computer Software

Students will be able to get access to Microsoft Office 365 for free using Keyano credentials by [clicking here](#).

Recording of Lectures and Intellectual Property

Students may only record a lecture if explicit permission is provided by the instructor or by 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 (instructor, or students) 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 are having issues with your student account, you can contact the ITS Helpdesk by emailing its.helpdesk@keyano.ca or calling 780-791-4965.

See Next Page for system Requirements

System requirements:

Microsoft Windows	Apple
<p>Minimum Requirements:</p> <p>A Windows 10 computer/laptop</p> <ul style="list-style-type: none"> · Minimum 4GB of RAM. · 10GB+ available hard drive storage. · Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). <u>Microsoft Office</u> software is free to all Keyano students and employees. · Microphone, webcam and speakers. A headset with a microphone is recommended. · System updates must be regularly installed. · Anti-Virus / Anti-Malware software 	<p>Minimum Requirements:</p> <p>A Macintosh (V10.14 and above) computer/laptop</p> <ul style="list-style-type: none"> · Minimum 4GB of RAM. · 10GB+ available hard drive storage. · Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). <u>Microsoft Office</u> software is free to all Keyano students and employees. · Microphone, webcam and speakers. A headset with a microphone is recommended. · System updates must be regularly installed. · Anti-Virus / Anti-Malware software.
<p>Recommended Requirements</p> <ul style="list-style-type: none"> · 8GB of RAM · A method of backing up/synchronizing to local or cloud-based storage such as OneDrive is highly recommended. This is included if you complete the setup of KeyanoMail and download MS Office using your Keyano email for free. 	<p>Recommended Requirements</p> <ul style="list-style-type: none"> · 8GB of RAM · A method of backing up/synchronizing to local or cloud-based storage such as OneDrive is highly recommended. This is included if you complete the setup of KeyanoMail and download MS Office using your Keyano email for free.
<p>Chromebooks are not recommended as they are not compatible with testing lockdown browsers.</p> <p>A Microsoft Surface or iPad or iPad Pro may be possible alternatives in some program areas.</p>	

See the Next Page for the Course Schedule

Week	Dates	Topics to be Covered
1	Sept 1, 2	Course Intro Trig, Angle, Algebra and Problem Solving Review
2	Sept 8, 9 (no class Sept 6)	2.1 Angles in standard Position 2.2 Trig Ratios of Any Angle
3	Sept 13, 15, 16	2.3 Sine Law 2.4 Cosine Law (Sept 15 Quiz: 2.1-2.2) 3.1 Quadratic Functions in Vertex Form (Ch2 Assignment Due Friday Sept 17)
4	Sept 20, 22, 23	3.2 Quadratic Standard in Standard Form 3.3 Completing the Square Sept 23 Exam CH2
5	Sept 27, 29, 30	4.1 Graphing Quadratic Equations 4.2 Factoring Quadratic Equations 4.3 Solving By completing the Square (Sept 30 Quiz: CH3)
6	Oct 4, 6, 7	4.4 The Quadratic Formula 5.1 Radicals Intro (Oct 6 Factoring and Completing Square Quiz: CH4) 5.2 Multiplying and Diving by Radicals (Ch3/4 Assignment Due Thursday Oct. 7)
7	Oct 13, 14 No Class Oct 11	5.3 Radical Equations Oct 14 Exam CH3/4
8	Oct 18, 20, 21	6.1 Rational Expressions 6.2 Multiplying and Dividing Rational Expressions Oct 21 BIG Quiz: CH5
9	Oct 25, 27, 28	6.3 Adding and Subtracting Rational Expressions 6.4 Rational Equations Review Class (Oct 28 Quiz: CH6) (Ch5/6 Assignment Due Thursday Oct. 28)
10	Nov 1, 3, 4	8.1 Graphing Systems of Inequalities 8.2 Solving Systems of inequalities Algebraically Nov 4 Exam Ch5/6
11	Nov 8 No class Nov 10,11	9.1 Linear Inequalities in two variables
12	Nov 15, 17, 18	9.2 Quadratic Inequalities in one variable 9.3 Quadratic Inequalities in two variables Review Class (Nov 18 CH8 Quiz) (CH8/9 Assignment Due Thursday Nov 18)
13	Nov 22, 24, 25	7.1 Absolute Value 7.2 Absolute Value Functions Nov 24 Exam Ch8/9
14	Nov 29, Dec 1,2	7.3 Absolute Value Equations 7.4 Reciprocal Functions Review day (Dec 2 Ch7 Quiz)
15		Final Exams Dec 8- 21