

Mathematics 20-2

5 credits, 16 weeks, 6 hours lecture

Topics covered include right angle trigonometry; applications involving rates and ratios (scale relationships of 2D and 3D shapes); manipulation and application of formulas; apply the power laws on integral and rational exponents; evaluate absolute values; perform all operations (addition, subtraction, multiplication, division) on radicals; solve radical equations; graph and apply quadratic functions; solve quadratic equations; spatial reasoning. Extensions to the core materials include a Business/

Arts Prep module involving the interpretation and analysis of statistical data and the utilization of inductive and deductive reasoning to prove conjectures and a Trades prep module for further exploration of 3D objects (model, draw, describe, scale diagrams, etc) and the creation and interpretation of circle and line graphs.

Alberta Education Equivalency: Math 20-2

Prerequisite: Math 10 C

Class Time

Monday	10:00 AM – 12:50 PM
Tuesday and Thursday	9:00 AM – 9:50 AM
Friday	9:00 AM – 10:50 AM

Instructor Information

Instructor	Gillian Whalen
Office phone (Conklin)	780-559-2434
Cell	587-646 - 4358
E-mail	Gillian.Whalen@keyano.ca

Office Hours

Monday	10:00 AM to 10:50AM
Tuesday	11:0 AM to 11:50 AM 2:00 PM to 2:50 PM
Wednesday	9:00 AM to 9:50 AM
Friday	11:00 AM to 11:50 AM

Required Resources

Textbook: Principles of Mathematics 11: Alberta (Nelson)

Materials: Scientific calculator or a graphing calculator, Geometry Set,
Graph paper, binder, ruled paper, pencils, pen, and eraser

***iLearn access is required to download course materials and to complete and submit assignments.

General Math Program Outcomes:

Students will

- ✓ Develop spatial sense and proportional reasoning
- ✓ Develop algebraic reasoning and number sense
- ✓ Develop algebraic and graphical reasoning through the study of relations

Course Outcomes:

Upon successful completion of Math 20-2, students will be able to:

- ✓ Solve problems that involve the application of rates.
- ✓ Solve problems that involve scale diagrams using proportional reasoning.
- ✓ Demonstrate an understanding of the relationships among scale factors, areas, surface areas and volumes of similar 2-D shapes and 3-D objects.
- ✓ Derive proofs that involve the properties of angles and triangles.
- ✓ Solve problems that involve properties of angles and triangles.
- ✓ Solve problems that involve the cosine law and the sine law, excluding the ambiguous case.
- ✓ Analyze and prove conjectures using inductive and deductive reasoning to solve problems.
- ✓ Analyze puzzles and games that involve spatial reasoning using problem solving strategies.
- ✓ Solve problems that involve operations on radicals and radical expressions with numerical and variable radicands (limited to square roots).
- ✓ Solve problems that involve radical equations (limited to square roots or cube roots).
- ✓ Demonstrate an understanding of normal distribution, including:
 - standard deviation
 - z-scores
- ✓ Interpret statistical data using confidence intervals, confidence levels and margin of error
- ✓ Demonstrate an understanding of the characteristics of quadratic functions, including vertex, intercepts, domain and range and axis of symmetry.
- ✓ Solve problems that involve quadratic equations.

- ✓ Research and give a presentation on a historical event or area of interest that involves mathematics.

Proposed Topics:

Chapter 1: Inductive & Deductive Reasoning

- 1.1. Making Conjectures: Inductive Reasoning
- 1.2. Exploring the validity of conjectures
- 1.3. Using reasoning to find a counterexample to a conjecture
- 1.4. Proving conjectures: deductive reasoning
- 1.5. Proofs that are not valid
- 1.6. Reasoning to solve problems
- 1.7. Analyzing puzzles and games

2. Chapter 2: Properties of Angles & Triangles

- 2.1. Exploring parallel lines
- 2.2. Angles formed by parallel lines
- 2.3. Angle properties in triangles
- 2.4. Angle properties in polygons
- 2.5. Exploring congruent triangles
- 2.6. Proving congruent triangles

3. Chapter 3: Acute Triangle Trigonometry

- 3.1. Exploring side-angle relationships in acute triangles
- 3.2. Proving and applying the Sine law
- 3.3. Proving and applying the Cosine law
- 3.4. Solving problems using acute triangles

4. Chapter 4: Radicals

- 4.1. Mixed and entire radicals
- 4.2. Adding and subtracting radicals
- 4.3. Multiplying and dividing radicals
- 4.4. Simplifying algebraic expressions involving radicals
- 4.5. Exploring radical equations
- 4.6. Solving radical equations

5. Chapter 5: Statistical Reasoning

5.1.Exploring data

5.2.Frequency tables, histograms, and frequency polygons

5.3.Standard deviation

5.4.The normal distribution

5.5.Z-scores

5.6.Confidence intervals

6. Chapter 6: Quadratic Functions

6.1.Exploring quadratic relations

6.2.Properties of graphs of quadratic functions

6.3.Factored form of a quadratic function

6.4.Vertex form of a quadratic function

6.5.Solving problems using quadratic function models

7. Chapter 7: Quadratic Equations

7.1.Solving quadratic equations by graphing

7.2.Solving quadratic equations by factoring

7.3.Solving quadratic equations using the quadratic formula

7.4.Solving problems using quadratic equation.

Evaluation:

Type	Weighting
Assignments	30%
Tests	40%
Final Exam	30%
Total	100%

Notes of Evaluation:

1. All the assignments can be downloaded from the e-campus site.
2. All tests must be written no later than one week prior to the final exam. Please notify me at least two days before you want to write the test so that I can make sure there is a copy of it in the skill centre.
3. You must write the final exam during the final exam period. If you are unable to write on time you must do the following;
 - a. Notify me (instructor) on or before the day the Exam is scheduled.
 - b. Produce a medical certificate indicating a serious illness.

Words of Wisdom:

1. Contact me if you have any questions or if you need help. **I can mainly be reached by email** or I am also willing to help students both during my office hours and arranged appointments. If you arrange an appointment with me outside office hours please be courteous and show up or at least notify me of any changes as soon as they occur.
2. Do all your assignments, homework and practice sheets regularly.
3. **Stick to the schedule as much as possible.** This will ensure you complete all the required work by the end of the course.
4. **Keyano College Grading System (from Credit Calendar)**

Descriptor	4.0 Grade Scale	Percentage Scale
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	60 % - 64 %
Poor	1.3	55 % - 59 %
Minimum Pass	1.0	50 % - 54 %
Failure	0.0	0 % - 49 %

Academic Regulations

Use this link to view Keyano College's Academic Regulations:

<http://www.keyano.ca/Media/Collections/Calendars/Keyano.Calendar1011-02-academicregulations.pdf>

Academic Schedule

<http://www.keyano.ca/Media/Collections/Calendars/Keyano.Calendar1011-01-introduction.pdf>

IMPORTANT DATES

Orientation Day	September 2
First Day of Class	September 3
Last day to ADD Courses	September 9
Tuition is due (\$100 late fee charged after this date)	September 9
Last day to DROP Courses with full refund (\$100 deposit is non-refundable)	September 16
Last day to WAIVE SAKC health and dental plan or add family	September 16
Last day to submit Keyano College Fall Awards Applications	September 30
Last day to WITHDRAW with a refund (50%)	October 10
Last day to WITHDRAW (Grade of W)	November 26

Math Progression

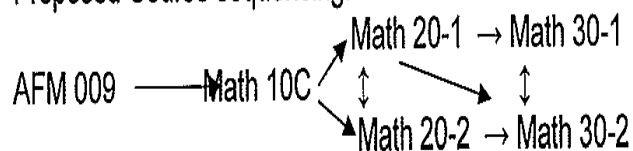
Students successfully completing Math 20-2 may choose to proceed to Math 20-1 OR 30-2 "-1" Course Sequence

This course sequence is designed to provide students with the mathematical understandings and critical-thinking skills identified for entry into post-secondary programs that require the study of theoretical calculus; students planning to study mathematics or sciences programs such

as engineering, mathematics, sciences, some business studies, or programs requiring advanced math skills. Topics include algebra and number; measurement; relations and functions; trigonometry; and permutations, combinations and binomial theorem.

"-2" Course Sequence. This course sequence is designed to provide students with the mathematical understandings and critical-thinking skills identified for post-secondary studies in programs that do not require the study of theoretical calculus; students planning to attend post-secondary programs that are not math or science based; this path will fulfill most students' needs. Topics include geometry, measurement, number and logic, logical reasoning, relations and functions, statistics, and probability.

Proposed Course sequencing:



Office of the Registrar

Address: 8115 Franklin Avenue
 T9H 2H7
 Fort McMurray

Email: registrar@keyano.ca

Website: www.keyano.ca

Phone: (780) 791- 4801

Fax: (780) 791 – 4952

Keyano College Main Switchboard Toll Free: 1-800-251-1408

*It is your responsibility to contact the Office of the Registrar to complete the forms for withdrawal or change of registration, and any other required forms. Please refer to the list of important dates noted below.

Authorization

The course outline for **MATH 20-2 INT – FALL 2014** has been authorized by the following individuals:



Gillian Whalen, Instructor

Lisa Turner (Chair)

Guy Harmer (Dean)

Course Outline Effective Date: _____
MM/DD/YYYY