



Academic Foundations –
School of Career & Education Access
ACADEMIC FOUNDATIONS MATH 009(AFM009)
Section M
COURSE OUTLINE
FALL 2013

Course Description

ACADEMIC FOUNDATIONS MATH 009 AFM009

6 credits, 16 weeks, 8 hours / week

AFM 009 will review all four operations (addition, subtraction, multiplication, division) on rational numbers including rational and irrational square roots. Students will explore algebra including the simplifying of the exponent laws, algebraic expressions and polynomial operations. Students will also explore the solving of linear equations (two or more steps) and linear inequalities in one variable as well as the graphing of linear equations in two variables. A review of two and three dimensional measurement will be applied to volume and surface area, the Pythagorean Theorem and circle properties. Students will apply their number sense to the application of probability in our society.

Course Hours, Instructor Contact Information, Office Hours

Course Hours: Monday/Tuesday : 9.00-11.00; Wed: 12.00-2.00; Thurs: 10.00-12.00

Instructor: Linda Mason

E-mail: linda.mason@keyano.ca

Phone Number: 780-828-4434

Blackberry: 780-838-1652

Office: Dorothy McDonald (Fort McKay) Learning Centre

Office Hours: Monday – Wed: (7.45 – 8.30) Mon – Thurs: (12.00 – 12.30)

Thurs: (8.30- 9.00) Friday: (9.00 – 9.15)

Required and Recommended Resources

1. "Pearson Custom Mathematics for Canada – Keyano College Math 009".
2. Geometry set
3. Scientific calculator
4. Binder, lined paper, pencils

Learner Outcomes

SUMMARY OF OBJECTIVES

- To further enhance basic mathematical skills
- To develop skills in basic algebra and geometry
- To develop the ability to apply mathematical concepts and skills to the solution of problems
- To develop logical and analytical thought processes useful in many problem-solving endeavors
- To foster an enjoyment for mathematics

STUDENT LEARNING OUTCOMES.

Number Strand

1. Demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by:
 - representing repeated multiplication, using powers
 - using patterns to show that a power with an exponent of zero is equal to one
 - solving problems involving powers.
2. Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents:
 - $(am)(an) = am+n$ • $am \div an = am-n, m > n$
3. Demonstrate an understanding of rational numbers by:
 - comparing and ordering rational numbers
 - solving problems that involve arithmetic operations on rational numbers.
4. Explain and apply the order of operations, including exponents, with and without technology.
5. Determine the square root of positive rational numbers that are perfect squares
6. Determine an approximate square root of positive rational numbers that are non-perfect squares.

Patterns and Relations Strand

1. Generalize a pattern arising from a problem-solving context, using a linear equation, and verify by substitution.
2. Graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems.
3. Model and solve problems, using linear equations of the form:
 - $ax = b$
 - $x/a = b, a \neq 0$
 - $ax + b = c$
 - $x/a + b = c, a \neq 0$
 - $ax = b + cx$
 - $a(x + b) = c$
 - $ax + b = cx + d$
 - $a(bx + c) = d(ex + f)$

$$a/x = b, x \neq 0$$

where a, b, c, d, e and f are rational numbers.

4. Explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context.
5. Demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to 2).
6. Model, record and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially and symbolically (limited to polynomials of degree less than or equal to 2).
7. Model, record and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials, concretely, pictorially and symbolically.

Shape and Space Strand

1. Solve problems and justify the solution strategy, using the following circle properties: • the perpendicular from the centre of a circle to a chord bisects the chord • the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc the inscribed angles subtended by the same arc are congruent • a tangent to a circle is perpendicular to the radius at the point of tangency.
2. Determine the surface area of composite 3-D objects to solve problems.
3. Demonstrate an understanding of similarity of polygons.
4. Draw and interpret scale diagrams of 2-D shapes.
5. Demonstrate an understanding of line and rotation symmetry.

Statistics and Probability Strand

1. Describe the effect of: • bias • use of language • ethics • cost • time and timing • privacy • cultural sensitivity on the collection of data.
2. Select and defend the choice of using either a population or a sample of a population to answer a question.
3. Develop and implement a project plan for the collection, display and analysis of data by: • formulating a question for investigation • choosing a data collection method that includes social considerations • selecting a population or a sample • collecting the data • displaying the collected data in an appropriate manner • drawing conclusions to answer the question.
4. Demonstrate an understanding of the role of probability in society.

Tentative Schedule and Proposed Topics

WEEK	DATES	UNIT	TOPIC
1 - 2	Sept	1	Signed Numbers: adding, subtracting, multiplying, dividing, order of operations, scientific notation.
3 - 4		2	Introduction to Algebra: variables & like terms, distributive property, solving equations, translating English to algebra.
5		3	Solve and graph Linear Inequalities: number lines, solving inequalities in one variable
6		4	Ratio and Proportion: ratios and rates, concept of proportions, solving proportions.
7		5	Percent: understanding; changing between percent, decimals and fractions; solving problems.
8		6	Powers and Polynomials: laws of exponents; polynomials; basic operations.
9&10		7	Graphing Linear Equations & Functions: graphing linear equations and functions; graphing with two variables using alternative methods; slope; linear equation of a line.
11 – 12		8	Measurement: metric; time, temperature and other measures; metric/U.S. comparisons; accuracy, error and measuring instruments.
13 & 14		9	Geometry: angles; rectangles & squares; parallelograms/trapezoids/rhombuses; triangles; square roots; Pythagoras; circles; volume; similar figures.
15		10	Solid Figures: prisms; pyramids and frustums; cylinders and spheres; cones and frustums.
16		Exam Week	

***Please Note:** This schedule may be modified at the instructor's discretion to facilitate unforeseen time constraints.

Evaluation

Course Evaluation

Assignments and Modules	70%
Tests and Mid Term	10%
Final Examination	20%
TOTAL	100%

*Your instructor requires that all course assignments be submitted in hardcopy (paper) format.

**Please ensure that each assignment (whether formal or informal) submitted includes the following information in the upper left hand corner of the first page:

- The student's name
- The instructor's name
- The course title
- The assignment title
- The due date
- The date of submission

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%

Course Evaluation Late Policy

- Assignments are due at the **beginning of class** on the scheduled due date, any assignments submitted beyond the start of class will be counted as late and mark deduction will apply. Please ensure your assignment has been accounted for by submitting it directly to your instructor in person.
- Late assignments will be subject to a 10% mark reduction per day to a limit of four business days, after which the assignment will receive a grade of zero.
 - Weekends and holidays will be counted as '1 business day' for the purposes of late mark calculation.
- Extenuating circumstances or absences beyond the student's control may warrant, *at the instructor's discretion and permission*, an extension or opportunity to submit a makeup assignment.

Performance Requirements for Students & Relevant Keyano College Policies

1. Student Attendance (from Credit Calendar)

Regular, punctual attendance is necessary for success at Keyano College and on the job after graduation. Students are responsible for attending all learning activities in their courses on a regular and punctual basis. Excessive or inexcusable absences can result in poor or failing grades, loss or reduction of sponsor allowances, and/ or probation or suspension. Students are responsible for knowing the attendance policy of their course and/or program.

Attendance Notes (from Instructor)

- Please notify your instructor of absences via e-mail, voice mail, telephone, or text message (preferably in advance of the absence); if your absence will be for more than one class day, please communicate the extended absence to your instructor. It is the student's responsibility to seek out missed assignments / tasks that were assigned during absence in a timely manner. Your instructor encourages you to make use of their assigned office hours for this purpose.
- Medical documentation (ex: doctor's note, hospital bracelet, medical certificate) will be required for those students who have missed major assignments or exams and wish to be offered the opportunity to complete a makeup assignment or exam.

2. Academic Misconduct / Student Responsibilities (from Credit Calendar)

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.

Penalties for academic offences may range from a verbal reprimand to dismissal from the College, and in certain circumstances may involve legal action.

- By virtue of membership in the College's academic community, students accept a responsibility to understand and abide by the Academic Regulations stated in the Keyano College course calendar.
- Student Responsibilities: Students must "refrain from unduly disturbing, disrupting or otherwise interfering" (Keyano College Credit Calendar) with the work or other activities of fellow students or staff.
- See also: Student Rights (Keyano College Credit Calendar).

3. Academic Misconduct Notes (from Instructor)

- Plagiarism is defined as "taking and using or claiming the thoughts, writings, inventions, etcetera of another person as one's own". Taking the words or ideas of another person and stating them as your own is plagiarism. When it is necessary to borrow ideas from others, you must **give credit** to the lender. You may **never** use another student's work as your own. If you are resubmitting one of your own, previously marked papers, it must be with the Instructor's approval. **Assigned work or tests showing evidence of copying or plagiarism will receive a mark of zero**, the student will be given a verbal warning and notation will be placed on the student's file. Penalties for further offences may include dismissal from the course or college. Please ensure you submit **your own original work** and not the work of a tutor, peer, or other person (including an unknown person / website / online material) for assigned work.
- Students in this course will be required to complete and submit an online learning activity that teaches students to be familiar with and understand plagiarism. Successful completion of this online activity will generate a certificate of completion – this certificate must be submitted to your instructor at the beginning of the course before any assignments are submitted for grading.

4. Final Examination

- The final examination will be three hours in length and scheduled during the final exam period. All final examinations must be written on the specified examination date, or the conditions listed in the Keyano College Calendar under "Deferred Final

Examination” will apply. Students with accommodations **must** inform the instructor and the SKILL Centre of any necessary arrangements at least *three weeks in advance* of the final examination date.

Specialized Supports and Duty to Accommodate

Learner Assistance Program (LAP)

If you have been diagnosed with a Learning Disability in the past, or you feel that you would benefit from some assistance from a Disabilities counsellor, please call our office 780-792-5608 to book an appointment. Services and accommodations are intended to assist you in your course, while maintaining the academic standards of Keyano College. We can be of assistance to you in disclosing your disability to your instructor, receiving accommodations, and your overall success at Keyano College.

Fort McKay(Dorothy McDonald) Learning Centre – Academic Accommodations

As a Community Access Point (CAP) to education and technology, the Fort McKay Learning Centre is a space designed for student use and learning. This educational space could be used for a variety of reasons. For example, it could be used as an after school study and homework space, a peer tutoring and collaborative learning space, or perhaps a place where students can work on group projects.

Please Note: Access to the Fort McKay Learning Centre as an after school space is dependent on the permission and scheduling of the CAP coordinator. Students who wish to utilize this space to enhance their educational opportunities should contact the CAP coordinator.

Withdrawal Information

Students who wish to withdraw from a course or program should contact the instructor and Program Chair for academic advice and counselling. To withdraw, students must complete and submit a Change of Registration form before **October 15th, 2013** (Last day to withdraw from course(s) with 50% refund of tuition fees) or **November 8th, 2013** (Last day to withdraw from course(s) without academic penalty).

Please Note: It is your responsibility as a student to complete the forms for Withdrawal or Change of Registration, and any other required forms, before the College deadlines. Please refer to the List of Important Dates noted in your course outline.

Contact Information:

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Authorizations

This course outline has been reviewed and approved by the following authorities:

Linda Mason, Instructor

Janet Lowndes, Chair

Date Authorized

Guy Harmer, Dean

Date Authorized

Signed copies to be delivered to:

Instructor

Office of the Registrar