

KEYANO COLLEGE

FORT CHIPEWYAN

COLLEGE PREPARATION PROGRAM

Winter 2013/2014 (JANUARY)

Room FC – 114

MATHEMATICS 20 – 2

Lecture F

Instructor: Maureen Clarke

Office Hours: Monday: 9:00 – 9:50 3:00 – 3:50
Tuesday: 9:00 – 9:50
Wednesday 2:00 – 2:50
Thursday 2:00 – 2:50

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Course Hours: Monday
Tuesday 1:00 – 1:50 2:00 – 2:50
Wednesday 11:00 – 11:50 1:00 – 1:50
Thursday 11:00 – 11:50 1:00 – 1:50
Friday

Hours of Instruction: 6 50-minutes classes per week

Length of Course: 16 weeks Jan 6 – April 30

Prerequisite: Math 20-2, Math 10-1, Math 10-C or permission of the program chair

Text: Principles of Mathematics 11: Alberta (Nelson)
ISBN: 978-0-17-650412-0

Important Dates for Academic Schedule:

Jan 1	College closed – New Year’s Day
Jan 6	Winter semester begins
Jan 6	First day of classes for students
Jan 10	Last day to add classes
	Winter semester fees due
Jan 13	Late fee applied
Jan 17	Last day to drop course(s) for academics
Jan 31	Last day to withdraw from course(s) with 50% refund of tuition fees
Feb 17	College closed – Family Day
Feb 24 – 28	Reading Week – No classes for academic programs
Mar 7	Last day to withdraw without academic penalty
April 18	College closed – Good Friday
April 21	College closed - Easter Monday
April 23	Last day of class
April 25 - 30	Final Exams
April 30	End of winter semester for academic programs
May 2	Graduation – Fort Chipewyan Campus

Course Description:

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.

Goals:

The main goals of mathematics education are to prepare students to

- solve problems
- communicate and reason mathematically
- make connections between mathematics and its applications
- become mathematically literate
- appreciate and value mathematics
- make informed decisions as contributors to society

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 2D shapes and 3D 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
 - margin of error
- demonstrate an understanding of the characteristics of quadratic functions, including:
 - vertex
 - intercepts
 - domain and range
 - axis of symmetry
- solve problems that involve quadratic equations
- research and give a presentation on a historical event of area of interest that involves mathematics

Course Content and Proposed Schedule:

Chapter 1: Inductive and Deductive Reasoning Jan 6 - 13

- 1.1. Making conjectures: inductive reasoning
- 1.2. Exploring the validity of conjectures
- 1.3 Using reasoning to find a counter example 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

Chapter 2: Properties of Angles and Triangles Jan 14 - 21

- 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

Chapter 3: Acute Triangle Trigonometry Jan 22 – Feb 5

- 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 triangles using acute triangles

Chapter 4: Radicals Feb 6 - 20

- 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

Chapter 5: Statistical Reasoning Mar 3 – Mar 11

- 5.1. Exploring data
- 5.2. Frequency tables, histograms, and frequency polygons
- 5.3. Standard deviations
- 5.4. The normal distribution
- 5.5. Z-scores
- 5.6. Confidence intervals

Midterm Exam

Chapter 6: Quadratic functions Mar 12 - 28

- 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

Chapter 7: Quadratic Equations Mar 31 – April 7

- 7.1. Solving quadratic equations by graphing
- 7.2. Solving quadratic functions by factoring
- 7.3. Solving quadratic equations using the Quadratic Formula
- 7.4. Solving problems using quadratic equations

Chapter 8: Proportional Reasoning April 8 - 15

- 8.1. Comparing and interpreting rates
- 8.2. Solving problems that involve rates
- 8.3. Scale diagrams
- 8.4. Scale factors and areas of 2D shapes
- 8.5. Similar objects: Scale models and scale diagrams
- 8.6. Scale factors and 3D objects

REVIEW April 16 - 17

FINAL EXAM TBA

EVALUATION:

Attendance	5%
Assignments	35 %
Tests and Quizzes	15%
Midterm	20%
Final Exam	25%
Total	100 %

GRADE POINT:

Descriptor	Alpha	4.0 Scale	Percentage
Excellent	A ⁺	4.0	91 – 100
	A	3.8	85 – 90
	A ⁻	3.7	80 – 84
Good	B ⁺	2.7	76 – 79
	B	2.7	73 – 75
	B ⁻	2.7	70 – 72
Satisfactory	C ⁺	2.3	67 – 69
	C	2.0	64 – 66
PROGRESSION			
PASS	C ⁻	1.7	60 – 63
Poor	D ⁺	1.3	57 – 59
Minimum Pass	D	1.0	50 – 56
Failure	F	0.0	0 – 49

Overall Expectations:

Please turn off cell phones, MP3 players, and any other electronic devices during class time.

Assignments: Assignments must be dated and submitted to the instructor no later than 4:00 on the day on which the assignment is due. Late assignments will be accepted during the following week but a penalty of 2% per day to a maximum of 10% will be deducted from the assignment mark; after this extension, a zero will be awarded to the assignment. Exemptions

for assignments may be granted in exceptional circumstances beyond the control of the student. A 5% bonus mark will be given to all assignments that are turned in on time.

Punctuality: Punctuality is important. Students are expected to be ready to begin work when the class is scheduled to begin. Therefore, students are encouraged to arrive at class a minute or two early so that they may organize their working materials by starting time. Late arrival is detrimental to the student and inconsiderate of the instructor and other students. Arrival in good time is associated with success and is considerate of the instructor and other students.

Attendance: Students are expected to attend all classes. Should a student miss a class for any reason it is his/her responsibility to cover the work missed and be ready for the next class.

If you want to be assured of success in this course, the following three things will most often grant that to you.

1. Attend every day and get involved in the class. When you can't attend, cover the work done anyway.
2. Ask a question when you do not understand the work and keep asking until you get an explanation you can understand. Feel free to ask for help from the Skill Center, your peers, and the instructor. Remember that the Skill Center is for "support" and not to "teach" you course content due to lack of attendance.
3. Do all of the daily work given or give it your very best effort and get help with the parts you are unable to complete. For maximum mastery of the material, you, the student, should spend one to two hours working on problems outside of class.

STUDENT RIGHTS AND RESPONSIBILITIES

Students should be aware of their rights and responsibilities as laid out in the Keyano College Credit Calendar 2013-2014. In order to “refrain from unduly disturbing, disrupting or otherwise interfering with studies ...” (KCCC, 2013-2014, p. 36 - 40) students should turn cell phones and pagers off when they come to class, and refrain from bringing children or other visitors to class.

LEARNER ASSISTANCE PROGRAM (LAP)

If you have a documented disability or you think that you would benefit from some assistance from a Disabilities Counsellor, please call or visit the Disability Supports Office (780) 792 – 5608 to book an appointment (across from the library). Services and accommodations are intended to assist you in your program of study, while maintaining the academic standards of Keyano College. They can be of assistance to you in disclosing your disability to your instructor, providing accommodations, and supporting your overall success at Keyano College.

HAVE A GREAT SEMESTER!