

COURSE NAME: MTH091 Mathematic Fundamentals and Indigenous Knowledge

Credit Value: 5
Total Course Hours: 70
Prerequisite Course(s): None
Corequisite Course(s): None

COURSE DESCRIPTION

MTH091 combines math fundamentals with the larger vision and worldview by First Peoples of earth and all that exists as present in an interconnected web of life. Within this theme and using a holistic integrative approach, students will have opportunity to discover a new level of confidence around using a number of strategies (e.g. mental math, paper-and-pencil algorithms and technology) and tools (e.g. drawings, calculators) to deal with the math fundamentals of whole numbers, fractions, decimals, ratio, rate and proportion, percent, measurement, algebra, statistics and probability, and rational numbers. By mastering these outcomes, students will build skills (e.g. critical thinking, organized thinking, communication) necessary for everyday life and for careers requiring a strong foundation in math.

PLAR INFORMATION

This course is eligible for Prior Learning Assessment and Recognition. Students are advised to discuss options with their program coordinator.

COURSE LEARNING OUTCOMES

Upon completion of this course, the student will have reliably demonstrated the ability to:

- 1.0 Organize thinking.
 - 1.1 Identify the different classifications of numbers (e.g. whole, integer, rational).
 - 1.2 Use key words and phrases (e.g. factors), word clues (e.g. less than), tools (e.g. place value grid) and symbols (e.g. signs of equality and inequality to show order of operations between two numbers, different mathematical symbols to show operations of multiplication and division).
 - 1.3 Use properties (e.g. communicative) to increase ease and efficiency in completing operations.
 - 1.4 Use grouping symbols (e.g. parenthesis, brackets and braces) and rules of order of operations involving combined operations.
 - 1.5 Use systematic approaches to find answers (e.g. factor trees, rules and procedures).
- 2.0 Complete Exercises Involving Whole Numbers.
 - 2.1 Interpret relevant terminology (e.g. factors, prime, composites).
 - 2.2 Express numbers in standard, expanded and word form.
 - 2.3 Round whole numbers to a given place value.
 - 2.4 Use mental math, paper-and pencil algorithms and technology to add, subtract, multiply and divide positive numbers.
 - 2.5 Use rounded numbers to approximate and estimate sums, differences, products, and quotients.
 - 2.6 Manually and use a calculator to check the accuracy of one's own work.
 - 2.7 Use a calculator to evaluate powers, roots and square roots.
 - 2.8 Write numbers as a power of ten, and convert numbers to and from scientific notation.
 - 2.9 Simplify expressions that contain exponents.
 - 2.10 Use a calculator and order of operations to simplify expressions involving combined operations.
- 3.0 Complete Exercises Using Fractions.
 - 3.1 Identify the order relations between two or more fractions.
 - 3.2 Interpret relevant terminology (e.g. LCM, GCF).

- 3.3 Identify the whole in situations involving fractions.
- 3.4 Express whole numbers as fractions.
- 3.5 Find the LCM, find the GFC, and find equivalent fractions.
- 3.6 Write an improper fraction as a mixed number or a whole number, write a mixed number as an improper fraction, and write a fraction in simplest form.
- 3.7 Add and subtract fractions with same or different denominators, add and subtract whole numbers, mixed numbers and fractions, multiply and divide fractions, multiply and divide whole numbers, mixed numbers, and fractions .
- 3.8 Use order of operations to simplify expressions containing grouping symbols, exponents, multiplication, division, addition, or subtraction.
- 4.0 Complete Exercises Involving Decimals.
- 4.1 Use place value to write a decimal in standard form and in words.
- 4.2 Round a decimal to a given place value and round final calculations into the proper number of significant digits.
- 4.3 Add, subtract, multiply, divide and multiply and divide decimals by a power of ten.
- 4.4 Use the relationship between numbers written in decimal notation and fractions to compare decimals.
- 4.5 Convert decimals to fractions and fractions to decimals to find the order relation between a fraction and a decimal.
- 4.6 Convert from decimal form to scientific notation, entering numbers in scientific notation in a calculator, and adding, subtracting, multiplying and dividing numbers in scientific notation.
- 4.7 Use order of operations to simplify expressions containing grouping symbols, exponents, multiplication, division, addition, or subtraction and round answer to significant digits.
- 5.0 Complete Exercises Involving Ratio, Rate and Proportion.
- 5.1 Communicate the comparison of two quantities with same units as ratios using a colon, using the word "to," and as a fraction.
- 5.2 Write the ratio of two quantities in simplest form, write rates in simplest form, write unit rates in which the denominator is one.
- 5.3 Use various concepts (e.g. equivalent fractions, cross multiplication, algebraic manipulation) to determine if two ratios are proportionate or to solve for an unknown.
- 6.0 Complete Exercises Involving Percent.
- 6.1 Write a percent as a decimal or a fraction, and a decimal or fraction as a percent.
- 6.2 Draw visual representatives of the common percentages (e.g. 10%, 25%, 33%, 50%, 75%).
- 6.3 Identify fractions and decimal equivalents for common percentages (e.g. $10\% = 1/10 = .1$)
- 6.4 Use percent equation and proportion method to find percent.
- 7.0 Complete Exercises Involving Measurement.
- 7.1 Express metric measures correctly using rules of the metric system.
- 7.2 Identify the basic unit for length, weight, and volume in the metric system.
- 7.3 Select appropriate method (moving the decimal point, using ratio and proportion, and dimensional analysis) to either or covert within the same system and between systems.
- 7.4 Convert units of length, mass and capacity in the metric system of measurement.
- 7.5 Convert units of time.
- 7.6 Convert units of length, mass, and capacity in the Imperial system.
- 7.7 Convert units of length, mass, and capacity between the Imperial system and the metric system of measurement.
- 7.8 Convert units of temperature.
- 8.0 Complete Exercises Involving Algebra.
- 8.1 Interpret and evaluate variable expressions.
- 8.2 Simplify variable expressions containing no parenthesis and parenthesis.
- 8.3 Determine if a given number is the solution to an equation.
- 8.4 Solve an equation in the form $x + a = b$, $ax = b$, $ax + b = c$, $ax + b = cx + d$, $a(b+c) = ab + ac$
- 8.5 Translate a verbal expression into mathematical expressions given the variable and

by assigning the variable.

8.6 Translate a sentence into an equation and solve.

9.0 Complete Exercises Involving Statistics and Probability.

9.1 Read graphs (e.g. bar graph, broken-line graph, histogram, frequency polygon).

9.2 Find the mean, median and mode of a distribution.

9.3 Calculate the probability of simple events.

10.0 Complete Exercises Involving Rational Numbers.

10.1 Identify the order relation between two integers.

10.2 Evaluate expressions that contain the absolute value symbol.

10.3 Apply rules and procedures to add, multiply and divide integers having same and different signs, and subtract two numbers.

10.4 Express a number in scientific notation and change a number written in scientific to decimal notation.

10.5 Use order of operations to simplify expressions with rational numbers.

GENERAL EDUCATION

This is not a General Education course.

PROGRAM OUTCOMES

This course contributes to the following Ministry of Colleges and Universities approved program learning outcomes (PLO):

Indigenous Preparatory Studies

4. Apply problem solving skills and demonstrate critical decision making skills.

ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES

This course contributes to the following Ministry of Colleges and Universities approved essential employability skills (EES) outcomes:

3. Execute mathematical operations accurately

4. Apply a systematic approach to solve problems

5. Use a variety of thinking skills to anticipate and solve problems

9. Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.

EXTERNAL COURSE ACCREDITATIONS AND CONDITIONS

COURSE EVALUATION

In class participation through unit activities - 25%

In class and out of class individual and group assignments and projects - 25%

Quizzes - 25%

Final Exam - 25%

TOTAL - 100%

PROGRAM SPECIFIC GRADING

Per College Grading System

GRADING SYSTEM

A+:	90-100%	B+:	77-79%	C+:	65-69%	D:	50-54%	S - Satisfactory
A:	85-89%	B:	73-76%	C:	60-64%	F:	0-49%	I - Incomplete
A-:	80-84%	B-:	70-72%	D+:	55-59%			F - Repeat course

*For a complete detailed description please refer to the College website.

LEARNING RESOURCES

No textbook required. Direction is both delivered in class and on D2L. Resources include class handouts, PowerPoint presentations, worksheets, in class individual and group activities, in and out class assignments and projects. Resources listed in the course outline support the achievement of learning outcomes, and may be used throughout the course to varying degrees depending upon the instructor's teaching methodology and the nature of the resource.

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LEARNING ACTIVITIES

Lecture, examples with student input, module activities, in class and out of class individual and group assignments and projects, quizzes, final exam.

DELIVERY MODE

This course may be delivered, in whole or in part, in a number of modalities, including in class, online, hybrid, in a synchronous or asynchronous manner or a combination thereof, as per accreditation and/or regulatory standards where appropriate.

ACADEMIC POLICIES

Canadore College is committed to the highest standards of academic integrity, and expects students to adhere to these standards as part of the learning process in all environments. The College's Academic Integrity policy seeks to ensure that all students understand their rights and responsibilities in upholding academic integrity and that students receive an accurate and fair assessment of their work. Please review the Academic Integrity policy (A-18) and other academic policies found on our website:

<https://www.canadorecollege.ca/about/policies>.

COLLEGE POLICIES

- Protecting human rights in support of a respectful college community

For college policies please see: <http://www.canadorecollege.ca/about-us/college-policies>.

STUDENT SUCCESS SERVICES - Your Success Matters!

We provide student-focused services to facilitate students' success in their studies. Staff provide support by reducing and/or removing educational-related barriers through accommodation planning with students with disabilities, learning strategies, mental health and wellness events. Visit our webpage to learn more:

<https://www.canadorecollege.ca/support/student-success-services>

FIRST PEOPLES' CENTRE:

A culturally safe environment offering CONFIDENTIAL student focused services, drop in or make an appointment to access:

- One on one counselling
- Elder in residence program
- Peer tutoring
- Peer mentorship
- Lunch & learn workshops on study skills, self-care, life skills
- Learning Resource Centre

Drop by our offices at C254 College Drive, E101 Commerce Court or call 705 474 7600 Ext. 5961 College Drive / 5647 Commerce Court.

WAIVER OF RESPONSIBILITY

Every attempt is made to ensure the accuracy of this information as of the date of publication. The college reserves the right to modify, change, add, or delete content.

HISTORICAL COURSE OUTLINES

Students use course outlines to support their learning. Students are responsible for retaining course outlines for future use in applications for transfer of credit to other educational institutions.