

M1 Core Mathematics

Course Syllabus - 2025, Term 1

Teacher: James Harris

Department: Mathematics

Subject Code: MA21101

Periods per week: 4

Credits: 2.0

Course Description

This course will focus on the fundamental number properties that students require to successfully complete their future mathematics classes. The course will cover the integer system, including number lines, positive and negative integers, and zero. Students will learn how to perform operations on fractions and decimals, ratios and rates, and percents, and how to apply all of these to real world applications. Students will explore properties of exponents and get their first look at algebra as they learn how to evaluate and simplify expressions with exponents. The course will conclude with students learning about different types of data and how to properly collect and organize data. They will then discover how to both display and understand different types of data through the study of a variety of statistical charts and graphs.

Course Content

1. Integers
 - 1.1. Rounding and Estimation
 - 1.2. Positive and Negative Integers
 - 1.3. Opposites and Absolute Value
 - 1.4. Arithmetic Operations

2. Fractions, Decimals and Percents
 - 2.1. Place Value and Rounding
 - 2.2. Arithmetic Operations
 - 2.3. Factors and Multiples
 - 2.4. Relationships Between Percents, Decimals and Fractions
 - 2.5. Percentage of a Number

3. Ratios, Rates and Percents
 - 3.1. Ratios
 - 3.2. Rates
 - 3.3. Percents
4. Measurements and Units
 - 4.1. Systems of Measurements
 - 4.2. Unit Conversions
 - 4.3. Area and Volume
 - 4.4. Time
5. Expressions and Equations
 - 5.1. Algebraic and numerical expressions
 - 5.2. Equations
 - 5.3. Formulae and algebraic expressions
 - 5.4. Exponential equations
6. Exponents
 - 6.1. Prime and Composite Numbers
 - 6.2. Square and Cube Roots
 - 6.3. Properties of Exponents
 - 6.4. Evaluating expressions
 - 6.5. Scientific Notation (Standard Form)

Learning Outcomes

Integers

- Round numbers.
- Estimate the result of arithmetic operations.
- Perform arithmetic operations with positive and negative integers.
- Use negative integers in problems involving temperatures, altitude and finance.

Fractions, Decimals and Percentages

- Round fractions and decimals.
- Perform arithmetic operations on fractions and decimals.
- Simplify fractions.
- Convert between fractions, decimals and percent.
- Perform calculations involving percentages.

Expressions and Equations

- Write and evaluate algebraic expressions
- Evaluate numerical expressions
- Write and solve equations
- Solve equations and formula for variables
- Simplify exponential expressions

Exponents

- Simplify algebraic expressions with exponents.
- Evaluate expressions with exponents.
- Write numbers using scientific notation.

Learning Resources

Teacher Supplied notes,

Google Classroom,

Aleks McGraw Hill Interactive Software for Mathematics,

Khan Academy (online tutorial videos and practice sets).

Boardworks - Pre-Algebra Slides

Supplemental Video Resources

Math Antics - Supplement to teacher notes

MyWhyU - Supplement with teacher notes.

Teacher Supplied Practice Materials

Glencoe PreAlgebra Worksheets

Glencoe PreAlgebra Study Guides

Kuda Software PreAlgebra WorkSheets

Assessment Methods

Student overall grade will consist of Classwork (25% of Student grade) and Homework (25% of Student grade). If a Student Project is assigned, It will be considered part of Classwork (0% to 10% if a project is assigned). Classwork will be Student Notebook and other assigned work. They will be assessed at periodic times, normally aligned with a completion of a Unit Exam. The grading will be determined by checking student's notes for completeness, neatness of work, showing full working out and completing enough work (based on each student) that was assigned. Homework will primarily be composed of time spent and topics completed, doing assignments on Aleks interactive software. Students will have to do a minimum of one hour and 5 topics of Aleks homework to receive minimum passing scores. Scores will be assessed according to the following scale.

	Number of Topics / Week students must complete for each score.				
Prealgebra	10/10	9/10	8/10	7/10	6/10
Algebra 1A	5/5				
Algebra 1B	3/3				
Score	10	9	8	7	6
Late = 5/10 (By the following week)					Else = 0/10

In-class quizzes will be used to assess students' skills and understanding of basic concepts within each unit. These quizzes will be every week and the score will be averaged to create 10% of the overall grade.

Unit tests (6 Unit tests for Term 1) will make up 20% of the overall grade and a formal Term Exam will be 20% of the overall grade. The Term Exam will be comprehensive and will include a wide range of problems. About half of each exam will consist of problems that will cover the fundamental skills within the unit(s). The remainder of the exam will consist of problems that will require a deeper understanding of each topic and will require students to combine skills from several topics and also apply those skills and concepts to real-world application problems. All problems on exams will be graded on both methodology and accuracy, and partial credit will be awarded for demonstrating an understanding of the concept being tested even if the answer is incorrect. No credit will be given for an answer with no work shown where work was necessary.

Homework Policy

Notebooks must be up to date at the end of each unit, or when a notebook check has been announced. Aleks homework must be completed by 10PM Sunday Night. Any late submissions, Aleks or Notebook check will receive a minimum score of 50%. Any work over a week late, may or may not be accepted.

For students at risk of not meeting minimum required scores to pass, and want to achieve a minimum score, extra credit will be offered as additional Aleks homework.

Evaluation Breakdown	Total	100%
Assessment		30%
• Unit Tests (20%) • Mini Class Quizzes (10%)		
Student Work		50%
• Aleks Homework (25%) • Classwork/Notebook (25%)		
<u>Final Exam</u>		<u>20%</u>

Thai National Curriculum Standards

STRAND 1: NUMBERS AND OPERATIONS

Standard M1.1: Understanding diverse methods of presenting numbers and their application in real life

M1.1 Gr. 7/1: Specify or give examples and compare added integral numbers, subtracted integral numbers, 0, fractions and decimals.

M1.1 Gr. 7/2: Have concept of real numbers expressed in exponential notation with integer indices and write numbers in scientific notation.

Standard M1.2: Understanding results of operations of numbers, relationships of operations, and application of operations for problem-solving

M1.2 Gr. 7/1: Add, subtract, multiply and divide integral numbers for the purpose of problem-solving; be aware of validity of the answers; explain the results obtained from the addition, subtraction, multiplication, and division, and explain the relationship between addition and subtraction, and between multiplication and division of integral numbers.

M1.2 Gr. 7/2: Add, subtract, multiply and divide fractions and decimals for the purpose of problem-solving; be aware of validity of the answers; explain the results of the addition, subtraction, multiplication and division; and explain relationships between addition and subtraction, and between multiplication and division of fractions and decimals.

M1.2 Gr. 7/3: Explain results of expression in exponential notation of integral numbers, ratios and decimals.

M1.2 Gr. 7/4: Multiply and divide real numbers in the form of exponents with the same bases and integer indices.

Standard M1.3: Use of estimation in calculation and problem-solving

M1.3 Gr. 7/1: Use estimation appropriately in various situations, as well as for considering validity of answers reached through calculation.

Standard M1.4: Understanding of numerical system and application of numerical properties

M1.4 Gr. 7/1: Apply knowledge and properties of integers for problem-solving.

STRAND 4: ALGEBRA

Standard M4.1: Understanding and ability to analyse pattern, relation and function

M4.1 Gr. 7/1: Analyse and explain relations of a given pattern.

Standard M4.2: Ability to apply algebraic expressions, equations, inequalities, graphs and other mathematical models to represent various situations, as well as interpretation and application for problem-solving

M4.2 Gr. 7/1: Solve simple linear equations with one variable.

M4.2 Gr. 7/2: Write linear equations with one variable from simple situations or problems.

M4.2 Gr. 7/3: Solve problems involving simple linear equations with one variable, as well as be aware of the validity of the answer.

STRAND 6: MATHEMATICAL SKILLS AND PROCESSES

Standard M6.1: Capacity for problem-solving, reasoning, and communication; communication and presentation of mathematical concepts; linking various bodies of mathematical knowledge and linking mathematics with other disciplines; and attaining ability for creative thinking

M6.1 Gr. 7/1: Apply diverse methods for problem-solving.

M6.1 Gr. 7/2: Appropriately apply mathematical and technological knowledge, skills and processes for problem-solving in various situations.

M6.1 Gr. 7/3: Suitably provide reasoning for decision-making and appropriately present the conclusions reached.

M6.1 Gr. 7/4: Accurately and succinctly use mathematical language and symbols for communication of concepts and presentation.

M6.1 Gr. 7/5: Link various bodies of mathematical knowledge, and link mathematical knowledge, principles and processes with those of other disciplines.

M6.1 Gr. 7/6: Attain ability for creative thinking.

[Total 18 indicators]