

MATH 1015: Basic Mathematics and Applications (CMAT 1203)
LSU Dual Enrollment Program for Math Course Profile

Course Description:

This course covers basic mathematical skills of graphing, formulas for geometric measurement, systems of linear equations and inequalities, review of quadratic equations, logarithms and application to exponential growth and decay, triangle trigonometry and its application to geometry and measurement. [High school course code: 160375 Algebra III]

Course/Unit Credit:

3 credit hours; 1 Carnegie Unit

High School Course Code:

Not applicable

Grade(s):

10th, 11th or 12th grade

Primary Online Content Source:

Algebra & Trigonometry, 3e, MyMathLab, Kirk Trigsted

Chapters for LSU MATH 1015: Basic Mathematics and Applications

R — Review

1 — Equations, Inequalities, and Applications

2 — The Rectangular Coordinate System, Lines, and Circles

3 — Functions

5 — Exponential and Logarithmic Functions and Equations

6 — Introductions to Trigonometric Functions

9 — Applications of Trigonometry

12 — Systems of Equations

Section Names (Number of Exercises) and Learning Objectives

Chapter R: Review

R.2 Real Numbers (20)

- . Perform arithmetic operations
- . Determine the domain of a variable
 - Absolute value
 - Order of operations
 - Distributive property

R.3 Integer Exponents (21)

- . Evaluate expressions containing exponents
 - Properties of exponents

R.4 Polynomials (16)

- . Add, subtract, and multiply polynomials

R.6 Factoring Polynomials (25)

- . Factor the GCF of an expression
- . Factor the difference to two squares
- . Factor the sum and differences of two cubes
- . Factor perfect square trinomials
- . Factor by grouping
- . Factor trinomials using the a-c method

R.7 Rational Expressions (18)

- . Reduce a rational expression to its lowest terms
- . Add, subtract, multiply, and divide rational expressions

R.8 Roots, Radicals, and Rational Exponents (29)

- . Simplify radical expressions
- . Rationalize radical expressions
- . Understand the meaning of $a^{m/n}$
- . Simplify expressions with rational exponents

Chapter 1:

1.1 Linear Equations (20)

- . Solve equations in one variable
- . Solve linear equations
- . Solve equations that lead to linear equations

1.2 Applications of Equations (14)

- . Set up and solve applied problems

1.4 Quadratic Equations (22)

- . Solve quadratic equations by factoring
- . Solve quadratic equations by completing the square
- . Solve quadratic equations by using the quadratic formula

1.6 Other Types of Equations (15)

- . Solve higher-order polynomial equations
- . Solve equations involving single radicals
- . Solve equations that are quadratic in form

1.7 Linear Inequalities in One Variable (22)

- . Solve linear inequalities in one variable
- . Solve three-part inequalities in one variable

1.9 Polynomial and Rational Inequalities (15)

- . Solve the polynomial inequalities
- . Solve rational inequalities

Chapter 2:

2.1 Distance and Midpoint Formulas (8)

- . Use the distance and midpoint formulas

2.3 Lines (18)

- . Determine the slope of a line
- . Find the equation of a line using the point-slope form
- . Find the equation of a line using the slope-intercept form
- . Find the equation of a horizontal and vertical line
- . Write the equation of a line in standard form
- . Find the slope and the y-intercept of a line in standard form

- . Sketch lines by plotting intercepts

2.4 Parallel and Perpendicular Lines (6)

- . Determine whether lines are a parallel, perpendicular, or neither

Chapter 3: Functions

3.1 Functions (12)

- . Understand the definition of a function
- . Find the domain and range of functions
- . Use function notation and evaluate functions at given values

Chapter 5: Exponential and Logarithmic Functions

5.1a Exponential Function (7)

- . Evaluate exponential expressions

5.2 Logarithmic Functions (10)

- . Evaluate logarithmic expressions without a calculator
- . Change exponential expressions into logarithmic expressions
- . Change logarithmic expressions into exponential expressions

5.3 Properties of Logarithms (12)

- . Use the change of base formula to approximate logarithmic expressions
- . Expand logarithmic expressions using properties of logarithms
- . Condense logarithmic expressions using properties of logarithms

5.4 Logarithmic and Exponential Equations (10)

- . Solve exponential equations
- . Solve logarithmic equations

5.5 Applications of Exponential and Logarithmic Equations (13)

- . Solve applied problems involving compound interest
- . Solve equations of populations that obey the law of uninhibited growth or uninhibited decay

Chapter 6:

6.1 Angles and Their Measures (29)

- . Understand degree measure
- . Understand radian measure
- . Convert between degrees and radians
- . Find coterminal angles using degree measure
- . Find coterminal angles using radian measure

6.4 Right Triangle Trigonometry (21)

- . Understand the right triangle definitions of the trigonometric functions
- . Understand the fundamental trigonometric identities
- . Use the special right triangles
- . Find the exact value of the trigonometric functions of the special angles
- . Use a calculator to find the value of the trigonometric functions of any angle

6.5 Trigonometric Functions of General Angles (34)

- . Find the exact value of the trigonometric functions for general angles
- . Find the reference angle
- . Evaluate trigonometric functions of angles belonging to special families

Chapter 9:

9.1 Solving Right Triangles (9)

- . Solve right triangles

- . Solve applied problems using right triangles

9.2 The Law of Sines (12)

- . Determine if the Law of Sines can be used to solve an oblique triangle
- . Use the Law of Sines to solve the SAA case or the ASA case
- . Use the Law of Sines to solve the SSA (ambiguous) case
- . Use the Law of Sines to solve applied problems involving oblique triangles

9.3 The Law of Cosines (12)

- . Determine whether the Law of Sines or Cosines should be used to solve an oblique triangle
- . Use the Law of Cosines to solve the SAS case
- . Use the Law of Cosines to solve the SSS case
- . Use the Law of Cosines to solve applied problems involving oblique triangles

9.4 The Area of a Triangle (9)

- . Determine the area of oblique triangles
- . Use Heron's Formula to determine the area of an SSS triangle
- . Solve applied problem involving the area of triangles

Chapter 12:

12.1 Systems of Linear Equations: Substitution and Elimination (9)

- . Solve systems of equations using substitution or elimination

12.7 Systems of Inequalities (10)

- . Graph an inequality in two variables
- . Graph a system of linear inequalities in two variables