

MTH 060 : BEGINNING ALGEBRA

Transcript title

Beginning Algebra

Credits

4

Grading mode

Standard letter grades

Total contact hours

40

Lecture hours

40

Prerequisites

MTH 015 (or higher) or STAT 243Z or minimum placement Math Level 7.

Course Description

Introduces algebra, integers, rational and real numbers, algebraic expressions, linear equations in one and two variables, and graphical representations with a focus on modeling and applications.

Course learning outcomes

1. Perform multi-step computations requiring order of operations with real numbers.
2. Simplify algebraic expressions.
3. Algebraically solve linear equations of one or two variables.
4. Translate relationships between narrative, numeric, algebraic, and graphical representations (specifically lines).
5. Model and solve real-world and theoretical mathematical problems requiring solving linear equations in one and two variables.
6. Use function notation to make estimates and predictions in context.

Content outline

1. Operations and Expressions
 - a. Students will perform multi-step computations requiring order of operations with real numbers
 - i. Perform simple sign number and fraction computations without a calculator
 - ii. Evaluate expressions for given values
 - iii. Simplify expressions containing absolute value, exponents, fractions, and signed numbers
 - iv. Know that division by zero is undefined
 - v. Find the prime factorization of a number
 - vi. Know the meaning of equivalent expressions and be able to express fractions in simplified form
 2. Simplifying Expressions and Solving Equations
 - a. Students will simplify algebraic expressions
 - i. Use the commutative, associative, and distributive properties to simplify algebraic expressions
 - ii. Simplify algebraic expressions containing exponents, fractions, and signed numbers
 - iii. Translate narrative expressions to and from mathematical expressions
 - b. Students will algebraically solve linear equations of one or two variables
 - i. Use the commutative, associative, and distributive properties to solve linear equations
 - ii. Solve linear equations containing fractions and signed numbers
 - iii. Translate narrative expressions to and from mathematical equations
 - iv. Solve multivariable linear equations in terms of a specific variables
 - v. Distinguish between simplifying expressions and solving equations
 - vi. Solve a system of two equations algebraically
3. Graphical Representations
 - a. Students will translate relationships between narrative, numeric, algebraic, and graphical representations (specifically lines)
 - i. Create scattergrams from data sets or ordered pairs
 - ii. Know the meaning of, and how to calculate, the slope of a nonvertical line
 - iii. Know that the slope of a horizontal line is zero and the slope of a vertical line is undefined
 - iv. Recognize slope as a rate of change o Know the meaning of x, y, m, and b in an equation written in $y=mx+b$ form.
 - v. Graph a linear equation written in $y=mx+b$ form
 - vi. Graph a linear equation written in standard form
 - vii. Graph a linear equation by finding the intercepts
 - viii. Find an equation of a line from its graph
 - ix. Find an equation of a line by using the slope and a point
 - x. Find an equation of a line by using two points
 - xi. Use the slope formula to generate the point-slope form of a linear equation
 - xii. Know the relationship between slopes of parallel lines
 - xiii. Know the relationship between slopes of perpendicular lines
 - xiv. Use the terms independent variable and dependent variable as they relate to applications represented graphically
 - xv. Solve systems of two equations with two unknowns graphically
 - xvi. Know the three types of linear systems of two equations
4. Modeling, Applications, and Functions
 - a. Students will model and solve real-world, and theoretical mathematical problems requiring solving linear equations in one and two variables
 - i. Know the meanings of independent variable, dependent variable
 - ii. Relate word problems to their graphical representations
 - iii. Create a scattergram and determine whether the data appears linear
 - iv. Find and interpret the slope and intercepts of a line and of a linear model
 - v. Find an equation of a linear model and make predictions
 - b. Students will use function notation to make estimates and predictions in context.

- i. Write, evaluate, and interpret equations using function notation
- ii. Find inputs and outputs of a function
- iii. Use function notation with applied linear models
- iv. Determine if a relationship is a function
- v. Use the terminology domain and range when describing functions in context

Required materials

Students are required to have a license for web-based software which will include an e-text. Paper copy of the textbook is optional.