MATH-0910: BASIC ARITHMETIC AND PRE-ALGEBRA

Cuyahoga Community College

Viewing:MATH-0910 : Basic Arithmetic and Pre-Algebra

Board of Trustees:
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Academic Term:
Spring 2019

Subject Code
MATH - Mathematics

Course Number:
0910

Title:
Basic Arithmetic and Pre-Algebra

Catalog Description:
Includes real numbers (integers, fractions, signed fractions, and signed decimals) and operations (addition, subtraction, multiplication, and division) along with the use of order of operations, ratio rates, proportion, percent, English system of measurement, introduction to basic algebra and solving basic algebraic equations, and perimeter and area of basic geometric shapes. Includes applications and activities to build skills in estimation and problem solving. Grading for Math 0910 is P for Pass or NP for No Pass.

Credit Hour(s):
3

Lecture Hour(s):
3

Lab Hour(s):
0

Other Hour(s):
0

Requisites

Prerequisite and Corequisite
Sufficient score on assessment test, or departmental approval.

I. ACADEMIC CREDIT

Academic Credit According to the Ohio Department of Higher Education, one (1) semester hour of college credit will be awarded for each lecture hour. Students will be expected to work on out-of-class assignments on a regular basis which, over the length of the course, would normally average two hours of out-of-class study for each hour of formal class activity. For laboratory hours, one (1) credit shall be awarded for a minimum of three laboratory hours in a standard week for which little or no out-of-class study is required since three hours will be in the lab (i.e. Laboratory 03 hours). Whereas, one (1) credit shall be awarded for a minimum of two laboratory hours in a standard week, if supplemented by out-of-class assignments which would normally average one hour of out-of-class study preparing for or following up the laboratory experience (i.e. Laboratory 02 hours). Credit is also awarded for other hours such as directed practice, practicum, cooperative work experience, and field experience. The number of hours required to receive credit is listed under Other Hours on the syllabus. The number of credit hours for lecture, lab and other hours are listed at the beginning of the syllabus. Make sure you can prioritize your time accordingly. Proper planning, prioritization and dedication will enhance your success in this course.

The standard expectation for an online course is that you will spend 3 hours per week for each credit hour.

II. ACCESSIBILITY STATEMENT

If you need any special course adaptations or accommodations because of a documented disability, please notify your instructor within a reasonable length of time, preferably the first week of the term with formal notice of that need (i.e. an official letter from the Student Accessibility Services (SAS) office). Accommodations will not be made retroactively.
For specific information pertaining to ADA accommodation, please contact your campus SAS office or visit online at http://www.tri-c.edu/accessprograms. Blackboard accessibility information is available at http://access.blackboard.com.

III. ATTENDANCE TRACKING

Regular class attendance is expected. Tri-C is required by law to verify the enrollment of students who participate in federal Title IV student aid programs and/or who receive educational benefits through other funding sources. Eligibility for federal student financial aid is based in part on enrollment status.

Students who do not attend classes for the entire term are required to withdraw from the course(s). Additionally, students who withdraw from a course or stop attending class without officially withdrawing may be required to return all or a portion of their financial aid based on the date of last attendance. Students who do not attend the full session are responsible for withdrawing from the course(s).

Tri-C is responsible for identifying students who have not attended a course before financial aid funds can be applied to students’ accounts.

Therefore, attendance is recorded in the following ways:

• For in-person and blended-learning courses, students are required to attend the course by the 15th day of the semester (or equivalent for terms shorter than five weeks) to be considered attending. Students who have not met all attendance requirements for in-person and blended courses, as described herein, within the first two weeks or equivalent, will be considered not attending.

• For online courses, students are required to login at least two times per week and submit one assignment per week for the first two weeks of the semester, or equivalent to the 15th day of the term. Students who have not met all attendance requirements for online courses, as described herein, within the first two weeks or equivalent, will be considered not attending.

At the conclusion of the first two weeks of a semester or equivalent, instructors report any registered students who have “Never Attended” a course. Those students will be administratively withdrawn from that course. However, after the time period in the previous paragraphs, if a student stops attending a class or wants or needs to withdraw, for any reason, it is the student’s responsibility to take action to withdraw from the course. Students must complete and submit the appropriate Tri-C form by the established withdrawal deadline.

Tri-C is required to ensure that students receive financial aid only for courses that they attend and complete. Students reported for not attending at least one of their registered courses will have all financial aid funds held until confirmation of attendance in registered courses has been verified. Students who fail to complete at least one course may be required to repay all or a portion of their federal financial aid funds and may be ineligible to receive future federal financial aid awards. Students who withdraw from classes prior to completing more than 60 percent of their enrolled class time may be subject to the required federal refund policy.

If illness or emergency should necessitate a brief absence from class, students should confer with instructors upon their return. Students having problems with coursework due to a prolonged absence should confer with the instructor or a counselor.

IV. LEARNING OUTCOMES ASSESSMENT

Occasionally, in addition to submitting assignments to their instructors for evaluation and a grade, students will also be asked to submit completed assignments, called ‘artifacts,’ for assessment of course and program outcomes and the College’s Essential Learning Outcomes (ELOs). The artifacts will be submitted in Blackboard or a similar technology. The level of mastery of the outcome demonstrated by the artifact DOES NOT affect the student’s grade or academic record in any way. However, some instructors require that students submit their artifact before receiving their final grade. Some artifacts will be randomly selected for assessment, which will help determine improvements and support needed to further student success. If you have any questions, please feel free to speak with your instructor or contact the Learning Outcomes Assessment office.

V. CONCEALED CARRY STATEMENT

College policy prohibits the possession of weapons on college property by students, faculty and staff, unless specifically approved in advance as a job-related requirement (i.e., Tri-C campus police officers) or, in accordance with Ohio law, secured in a parked vehicle in a designated parking area only by an individual in possession of a valid conceal carry permit.

As a Tri-C student, your behavior on campus must comply with the student code of conduct which is available on page 29 within the Tri-C student handbook, available at http://www.tri-c.edu/student-resources/documents/studenthandbook.pdf. You must also comply with the College’s Zero Tolerance for Violence on College Property available at http://www.tri-c.edu/policies-and-procedures/documents/3354-1-20-10-zero-tolerance-for-violence-policy.pdf

Outcomes
Course Outcome(s):
Perform operations with Integers and Simplify Expressions using Integers.
Objective(s):
1. Identify integers based on the definition of integers.
2. Evaluate expressions using integers.
4. Estimate reasonable answers to application problems involving integers.
5. Graph integers on a number line.
6. Determine the absolute value of an integer.
7. Determine the additive inverse of an integer.
8. Use inequality symbols to compare integers.
9. Add, subtract, multiply, and divide integers.
10. Simplify expressions with exponents that have integer bases.
11. Use order of operations and Properties of Real Numbers to simplify expressions involving integers.
12. Based on the definition of a variable, identify and distinguish between constants and variables.

Course Outcome(s):
Perform operations with Fractions and Mixed Numbers and Simplify Expressions using Fractions and Mixed Numbers.

Objective(s):
1. Identify proper and improper fractions, mixed numbers, reciprocals, numerators and denominators.
2. Identify prime and composite numbers.
3. Write the prime factorization of a natural number.
4. Determine the Least Common Multiple (LCM) and Greatest Common Factor (GCF) of a set of numbers using prime factorization.
5. Graph positive and negative (signed) fractions and mixed numbers on a number line.
6. Use inequality symbols to compare fractions, including signed fractions.
7. Write fractions in simplest form.
8. Write equivalent fractions.
9. Add and subtract fractions that initially have common denominators.
10. Add and subtract fractions that initially do not have a common denominator by determining the Least Common Denominator (LCD).
11. Write mixed numbers as improper fractions and write improper fractions as mixed numbers.
12. Add and subtract mixed fractions.
13. Multiply and divide fractions and mixed numbers.
14. Perform all operations with signed fractions and mixed fractions.
15. Use order of operations and Properties of Real Numbers to simplify expressions.
16. Define and simplify complex fractions with operations involving signed fractions in the numerator and/or the denominator.
17. Solve application problems using fractions and mixed numbers, including the English system of measurement and conversions.

Course Outcome(s):
Perform Operations with Signed Decimals and Simplify Expressions using Signed Decimals.

Objective(s):
1. Graph signed decimals on a number line.
2. Identify the base 10 relationship of place values.
3. Read a decimal number using appropriate place values.
4. Write a decimal number in English using appropriate place values.
5. Use inequality symbols to compare signed decimals.
6. Convert signed decimals to fractions.
7. Convert signed fractions to decimals.
8. Use inequality symbols to compare signed fractions and decimals.
9. Add, subtract, multiply, and divide signed decimals.
10. Simplify expressions with exponents that have signed decimal bases.
11. Use order of operations and Properties of Real Numbers to simplify expressions involving signed decimals.
12. Solve application problems using signed decimals.
13. Estimate reasonable answers to application problems involving signed decimals.
15. Distinguish between the appropriateness of an answer as a fraction or decimal.

Course Outcome(s):
Identify Ratio and Rates, Solve Proportions and Applications.

Objective(s):
1. Using the definition of a ratio, write a ratio as a fraction in simplest form.
2. Write a rate as a fraction in simplest form.
3. Distinguish between a ratio and a rate.
4. Write a rate as a unit rate.
5. Using the definition of a proportion, translate an English sentence to a mathematical proportion.
6. Determine if a proportion is mathematically true.
7. Solve application problems involving ratios and rates.

Course Outcome(s):
Define the Basic Properties and Vocabulary of Algebra, Simplify Basic Algebraic Expressions, and Solve Basic Algebraic Equations.

Objective(s):
1. Using the definition of a term, identify terms.
2. Using the definition of a variable, identify variables.
3. Using the definition of a coefficient, identify coefficients.
4. Identify, add and subtract like terms.
5. Use the Distributive Property of Multiplication over Addition to simplify an expression.
6. Evaluate algebraic expressions.
7. Translate word phrases to algebraic expressions.
8. Identify the Addition Property for Equations (for Real Numbers).
9. Identify the Multiplication Property for Equations (for Real Numbers).
10. Simplify both sides of an equation, resulting in an equation that then involves, one-step to a solution by using either the Addition Property or Multiplication Property for Equations but, not both.
11. Solve application problems involving a combination of integers, decimal and/or fractions.

Course Outcome(s):
Convert between Percent, Fraction and Decimal and Solve Problems involving Percent.

Objective(s):
1. Use the definition of a percent to write percent.
2. Given a percent, fraction or decimal, write it in the other two formats.
3. Write and solve equations for the three basic types of percent problems.
4. Solve applications involving percent.

Course Outcome(s):
Apply basic geometric formulas.

Objective(s):
1. Identify a circle, rectangle, square, triangle, and parallelogram.
2. Determine the perimeter of a rectangle, square, triangle, and parallelogram, and circumference of a circle.
3. Determine the area of a circle, rectangle, square, triangle, and parallelogram.

Methods of Evaluation:
1. Periodic exams.
2. Homework.
3. Quizzes.
4. In class collaborative work.

Course Content Outline:
A. Integers
   1. Definition of integers
   2. Graph integers
   3. Absolute value
   4. Additive integers
   5. Inequalities
   6. Add, subtract, multiply, and divide
   7. Expressions with exponents
   8. Order of operations and properties of real numbers
   9. Constraints and variables
10. Evaluate expressions
11. Application problems
12. Estimation

B. Fractions and Mixed Numbers
1. Fractions, mixed numbers, reciprocals, numerators and denominators
2. Prime and composite numbers
3. Prime factorization of a natural number
4. Least Common Multiple (LCM) and Greatest Common Factor (GCF)
5. Graph
6. Inequalities
7. Simplify
8. Equivalent fractions
9. Add and subtract with common denominators
10. Add and subtract by determining LCD
11. Convert between mixed numbers and improper fractions
12. Add and subtract mixed fractions
13. Multiply and divide mixed fractions
14. Operations with signed fractions and mixed fractions
15. Order of operations with signed fractions and mixed fractions
16. Numeric complex fractions
17. Applications including English System of measurement

C. Signed decimals and expressions
1. Graph
2. Place values
3. Decimal numbers orally
4. Decimal numbers written in English
5. Decimal inequalities
6. Decimal to fractions
7. Fractions to decimals
8. Fraction and decimal inequalities
9. Add, subtract, multiply, and divide
10. Expressions with exponents
11. Decimals, order of operations and expressions
12. Applications
13. Estimation
14. Rounding
15. Fraction or decimal appropriateness

D. Ratios, Rates, and Proportions
1. Ratios
2. Rates
3. Ratio versus rate
4. Unit rate
5. Translate to proportion
6. True proportions
7. Applications

E. Algebra
1. Terms
2. Variables
3. Coefficients
4. Add and subtract like terms
5. Distributive Property of Multiplication over Addition
6. Evaluate expressions
7. Translate to algebraic expressions
8. Addition Property for Equations
9. Multiplication Property for Equations
10. Simplify and one-step to a solution
11. Applications

F. Percent
1. Definition
2. Conversion between percent, fraction, and decimal
3. Three basic types of percent problems and equations

G. Basic Geometric Formulas
1. Identify circle, rectangle, square, triangle, and parallelogram
2. Perimeter of rectangle, square, triangle, and parallelogram, and circumference of a circle
3. Area of circle, rectangle, square, triangle, and parallelogram

Resources


Resources Other
1. Activity sourcebook
2. Software provided by textbook publisher.

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