

## Course Description – Grades 9 – 12, ADULT

Subject Area: Mathematics  
Course Number: \_ \_ \_ \_ \_  
Course Title: Math for College Success  
Credit: 0.5 elective

### **Basic Assumptions for Mathematics Education:**

- All students have access to computers.
- Classroom activities are student-centered, emphasizing concrete experiences and active/experiential learning.
- Evaluation includes alternative methods of assessment.
- All strands addressed in the Sunshine State Standards are developed across the PreK-12 curriculum.

A. **Major Concepts/Content:** This course prepares students for entry level College Mathematics. Major topics include properties of integers and rational numbers, integer exponents, simple linear equations and inequalities, operations on polynomials including beginning techniques of factoring, introduction to graphing, and introduction to operations on rational expressions.

The content should include, but not be limited to, the following:

- using signed numbers
- simplifying algebraic expressions
- solving algebraic equations
- simplifying exponents and polynomials
- factoring polynomials
- graphing linear equations
- simplifying, multiplying, and dividing rational expressions
- simplifying and performing operations with radicals

B. **Course Requirements.** These requirements include the benchmarks from the Sunshine State Standards that are most relevant to this course. The benchmarks printed in regular type are required for this course.

**1. Utilize the order of operations with rational numbers.**

- MA.912.A.1.1 Know equivalent forms of real numbers (including integer exponents and radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers).
- MA.912.A.1.2 Compare real number expressions.
- MA.912.A.1.3 Simplify real number expressions using the laws of exponents.
- MA.912.A.1.4 Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, and irrational numbers) using multi-step and real-world problems.

**2. Simplify sums and differences of absolute values.**

- MA.912.A.1.1 Know equivalent forms of real numbers (including integer exponents and radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers).
- MA.912.A.1.2 Compare real number expressions.
- MA.912.A.1.3 Simplify real number expressions using the laws of exponents.
- MA.912.A.1.4 Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, and irrational numbers) using multi-step and real-world problems.

**3. Sets and set operations**

- MA.912.D.7.1 Perform set operations such as union and intersection, complement, and cross product.
- MA.912.D.7.2 Use Venn diagrams to explore relationships and patterns, and to make arguments about relationships between sets.

**4. Simplify and evaluate algebraic expressions.**

- MA.912.A.1.2 Compare real number expressions.
- MA.912.A.1.3 Simplify real number expressions using the laws of exponents.

**5. Solve linear equations in one variable.**

- MA.912.A.3.1 Solve linear equations in one variable that include simplifying algebraic expressions.
- MA.912.A.3.2 Identify and apply the distributive, associative, and commutative properties of real numbers and the properties of equality.
- MA.912.A.3.5 Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.

**6. Solve literal equations.**

- MA.912.A.3.3 Solve literal equations for a specified variable.

**7. Solve linear inequalities in one variable.**

- MA.912.A.3.4 Solve and graph simple and compound inequalities in one variable and be able to justify each step in a solution.
- MA.912.A.3.5 Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.
- MA.912.A.3.12 Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.

**8. Translate and solve word problems (including, but not limited to, proportions.)**

- MA.912.A.5.4 Solve algebraic proportions.
- MA.912.A.3.5 Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.

**9. Simplify exponential expressions with exponents that are positive negative, and zero.**

- MA.912.A.4.1 Simplify monomials and monomial expressions using the laws of integral exponents.

**10. Utilize scientific notation.**

MA.912.A.1.1 Know equivalent forms of real numbers (including integer exponents and radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers).

**11. Perform with polynomials (addition, subtraction, multiplication, and division.)**

MA.912.A.4.2 Add, subtract, and multiply polynomials.

MA.912.A.4.4 Divide polynomials by monomials and polynomials with various techniques, including synthetic division.

**12. Use and understand definitions and terminology associated with algebra topics.**

LA.910.1.6.1 The student will use new vocabulary that is introduced and taught directly

LA.910.1.6.5 The student will relate new vocabulary to familiar words

**13. Utilize the commutative, associative, distributive, identity, and inverse properties.**

MA.912.A.3.2 Identify and apply the distributive, associative, and commutative properties of real numbers and the properties of equality.

**14. Factor polynomials using the following techniques: finding greatest common factor, factoring by grouping, factoring trinomials, factoring difference of squares, factoring sum and difference of cubes, and using factoring to solve equations.**

MA.912.A.4.3 Factor polynomial expressions.

**15. Work with graphs, interpret, and create graphs in two variables, plot points, find and plot intercepts, and graph lines.**

LA.910.3.1.3 The student will pre-write by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn diagram, web, story map, plot pyramid) to develop a personal organizational style

- MA.912.A.10.1 Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess- and-check, solving a simpler problem, writing an equation, working backwards, and create a table.
- MA.912.A.10.2 Decide whether a solution is reasonable in the context of the original situation.
- MA.912.A.10.3 Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities rational or radical expressions or logarithmic or exponential functions).
- MA.912.A.3.8 Graph a line given any of the following information: a table of values, the x- and y-intercepts, two points, the slope and a point, the equation of the line in slope-intercept form, standard form, or point-slope form.
- MA.912.A.3.9 Determine the slope, x-intercept, and y-intercept of a line given its graph, its equation, or two points on the line.
- MA.912.A.3.10 Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation of a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line.
- MA.912.A.3.12 Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.

**16. Work with algebraic fractions, reduce algebraic fractions and perform multiplication and division on algebraic fractions.**

- MA.912.A.5.1 Simplify algebraic ratios
- MA.912.A.5.2 Add, subtract, multiply, and divide rational expressions.
- MA.912.A.5.7 Solve real-world problems involving rational equations (mixture, distance, work, interest, and ratio).

**17. Work with radicals, know terminology, simplify radical expressions, and perform addition and subtraction with radicals.**

- MA.912.A.6.1 Simplify radical expressions.

MA.912.A.6.2 Add, subtract, multiply and divide radical expressions (square roots and higher).