



## **CORE COURSE PERFORMANCE OBJECTIVES:**

The student will be able to:

1. Perform basic operations on real numbers.(CCC 7)
2. Perform operations with algebraic expressions including applications.(CCC2,7)
3. Perform basic operations with exponents and scientific notation.(CCC 7)
4. Perform basic operations and factoring of polynomials.(CCC 7)
5. Graph functions.(CCC 7)
6. Solve equations and inequalities including applications.(CCC 2,7)
7. Solve systems of simultaneous equations including applications.(CCC 2,7)
8. Perform operations on radicals and radical expressions.(CCC 7)
9. Perform basic operations on algebraic functions. (CCC7)

## **MEASURABLE PERFORMANCE OBJECTIVES**

The Elementary Algebra student will be tested on the following measurable performance objectives:

- 1. Perform basic operations on real numbers. (CCC 7)**
  - 1.1 Use the names of different types of numbers, add signed numbers with same signs and add signed numbers with opposite signs.
  - 1.2 Subtract signed numbers.
  - 1.3 Multiply and divide signed numbers.
  - 1.4 Write numbers in exponent form; evaluate numerical expressions that contain exponents.
  - 1.5 Recognize polynomials; use the distributive property to multiply a polynomial by a monomial.
  - 1.6 Identify like terms, combine like terms.
  - 1.7 Use the order of operations to simplify numerical expressions involving addition, subtraction, multiplication, division and exponents.
  - 1.8 Evaluate a variable expression for a specified value; evaluate a formula by substitution.
  - 1.9 Simplify variable expressions with several grouping symbols.

- 1.10 Evaluate a square root of a perfect square and approximate a square root to the nearest thousandth.
- 1.11 Simplify radical expressions.
- 1.12 Add or subtract radical expressions.
- 1.13 Multiply radical expressions.

**2. Perform operations with algebraic expressions. (CCC 2, 7)**

- 2.1 Solve equations of the form  $x + b = c$  using the addition principle.
- 2.2 Solve equations of the form  $\frac{x}{a} = b$  and  $ax = b$ .
- 2.3 Solve equations of the form  $ax + b = c$  and equations with parentheses.
- 2.4 Solve equations with fractions.
- 2.5 Solve formulas for a specified variable.
- 2.6 Interpret an inequality statement and graph an inequality on a number line.
- 2.7 Solve an inequality.
- 2.8 Write an algebraic expression for two or more quantities that are being compared.
- 2.9 Use equations to solve word problems.
- 2.10 Solve word problems involving comparisons.
- 2.11 Solve applied problems with periodic rate changes, percent problems, investment problems involving simple interest, and coin problems.
- 2.12 Solve word problems using geometric formulas.
- 2.13 Use inequalities to solve word problems.

**3. Perform basic operations with exponents and scientific notation. (CCC 7)**

- 3.1 Multiply and divide exponential expressions with like bases and raise exponential expressions to a power.

- 3.2 Use negative exponents and write numbers in scientific notation.
4. **Perform basic operations and factoring of polynomials. (CCC 7)**
- 4.1 Add and subtract polynomials.
- 4.2 Multiply polynomials.
- 4.3 Multiply binomials of the type  $(a + b)(a - b)$ ,  $(a + b)^2$  and  $(a - b)^2$ ; multiply polynomials with more than two terms.
- 4.4 Divide a polynomial by a monomial and by a binomial.
- 4.5 Factor polynomials containing a common factor in each term.
- 4.6 Factor problems with four terms by grouping.
- 4.7 Factor polynomials of the form  $x^2 + bx + c$ .
- 4.8 Factor a trinomial of the form  $ax^2 + bx + c$  by the trial and error method and by the grouping method.
- 4.9 Recognize and factor problems of the type  $a^2 - b^2$  and the type  $a^2 + 2ab + b^2$ .
- 4.10 Identify and factor any polynomial that can be factored.
- 4.11 Solve a quadratic equation by factoring.
5. **Graph functions. (CCC 7)**
- 5.1 Plot a point given the coordinates, name the coordinates of a plotted point, and find ordered pairs for a given linear equation.
- 5.2 Graph a straight line by plotting points, by finding its x- and y-intercepts, and graph horizontal and vertical lines.
- 5.3 Graph linear inequalities in two variables.
6. **Solve equations and inequalities including applications. (CCC 2, 7)**
- 6.1 Find the slope given (a) two points and (b) the equation of a line; write the equation of a line given the slope and y-intercept, graph using slope y-intercept and find slope of lines that are parallel or perpendicular.
- 6.2 Write the equation of a line given (a) a point and a slope, (b) two points, and (c) from a graph of a line.

**7. Solve systems of simultaneous equations including applications. (CCC 2, 7)**

7.1 Solve a system of linear equations by graphing.

7.2 Solve a system of linear equations by the substitution method.

7.3 Solve a system of linear equations by the addition method (elimination method).

7.4 Choose an appropriate method to solve a system of linear equations algebraically.

7.5 Solve word problems using a system of linear equations.

**8. Perform operations on radicals and radical expressions. (CCC 7)**

8.1 Simplify a fraction involving radicals.

8.2 Use the Pythagorean Theorem and solve radical equations.

8.3 Solve problems involving direct and inverse variations.

8.4 Simplify an algebraic fraction by factoring.

8.5 Multiply and divide algebraic fractions and write the answer in simplest form.

8.6 Add and subtract algebraic fractions with the same denominator and with different denominators.

**9. Perform basic operations on algebraic functions. (CCC 7)**

9.1 Simplify complex rational expressions.

9.2 Solve equations involving algebraic fractions.

9.3 Solve problems involving ratio and proportion, similar triangles, distance problems and work problems.

## EVALUATION CRITERIA

Students will demonstrate proficiency on all Measurable Performance Objectives at least to the 75% level. The final grade will be determined using the College Grading System:

92 – 100	AE
83 – 91	BE
75 – 82	CE
0 – 74	RE

**Students should refer to the Student Handbook for information on Academic Standing Policy, Academic Honesty Policy, Students Rights and Responsibilities and other policies relevant to their academic progress.**

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