

# Algebra

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**At the end of the school year, students will be able to...**

**GOAL 6**

**Numbers Sense and Computations**

**Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, division), patterns, ratios and proportions.**

**STANDARD A**

**Demonstrate knowledge and use of numbers and their representations in a broad range of theoretical and practical settings.**

- \_\_\_\_\_ Identify characteristics of the real number system.
- \_\_\_\_\_ Graph real numbers on a number line and coordinate plane.
- \_\_\_\_\_ Determine equivalent forms for fractions, decimal fractions, percents and ratios.
- \_\_\_\_\_ Compare ratios and identify proportions.
- \_\_\_\_\_ Compare and contrast properties of the real number system
- \_\_\_\_\_ Identify and convert standard numbers to/from scientific notation.
- \_\_\_\_\_ Simplifying radicals

**STANDARD B**

**Investigate, represent and solve problems using number facts, operations (addition, subtraction, multiplication and division) and their properties, algorithms, and relationships.**

- \_\_\_\_\_ Develop fluency in operations with real numbers.
- \_\_\_\_\_ Analyze and determine appropriate operations to solve problems.
- \_\_\_\_\_ Evaluate algebraic expressions using order of operations with integral exponents.

**STANDARD C**

**Compute and estimate using mental mathematics, paper-and-pencil methods, calculators and computers.**

- \_\_\_\_\_ Select and use appropriate operations, methods and tools to compute or estimate with real numbers and algebraic expressions.
- \_\_\_\_\_ Determine if the conclusion is reasonable for the given set of information.

**STANDARD D**

**Solve problems using comparisons of quantities, ratios, proportions and percents.**

- \_\_\_\_\_ Solve proportions
- \_\_\_\_\_ Solve word problems using proportions
- \_\_\_\_\_ Apply percents to consumer applications (percent of change, tax rates, discounts, etc.).

## GOAL 7 Measurement

Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.

### STANDARD A

**Measure and compare quantities using appropriate units, instruments, and methods.**

- \_\_\_\_\_ Use units and scale factors to model real world applications.
- \_\_\_\_\_ Find linear, weight and capacity measures using English and metric systems.
- \_\_\_\_\_ Use knowledge of perimeter, area, volume, time, temperature and rate.

### STANDARD B

**Estimate measurements and determine acceptable levels of accuracy.**

- \_\_\_\_\_ Estimate in various contexts using appropriate units.

### STANDARD C

**Select and use appropriate technology, instruments and formulas to solve problems, interpret results and communicate findings.**

- \_\_\_\_\_ Select and use appropriate tools to solve problems and communicate results
- \_\_\_\_\_ Apply formulas to solve measurement applications
- \_\_\_\_\_ Make indirect measurements including heights and distances using proportions

## GOAL 8 Algebra

Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

### STANDARD A

**Describe numerical relationships using variables and patterns.**

- \_\_\_\_\_ Use decimal approximations for irrational numbers
- \_\_\_\_\_ Express real numbers in decimal and fraction form
- \_\_\_\_\_ Simplify algebraic expressions including polynomials, rational numbers, and radicals
- \_\_\_\_\_ Solve linear equations, inequalities and systems of equations and inequalities graphically and algebraically
- \_\_\_\_\_ Translate verbal phrases and sentences into algebraic expressions and sentences

### STANDARD B

**Interpret and describe numerical relationships using tables, graphs and symbols.**

- \_\_\_\_\_ Graph linear equations and inequalities using a number line
- \_\_\_\_\_ Use, interpret, and graph equations, inequalities and functions, including absolute value
- \_\_\_\_\_ Graph linear equations using value tables and slope
- \_\_\_\_\_ Graph linear inequalities and systems of equations and inequalities

**STANDARD C** Solve problems using systems of numbers and their properties.

- \_\_\_\_\_ Write equations and inequalities for given conditions.
- \_\_\_\_\_ Solve problems that can be modeled by linear and quadratic equations and inequalities
- \_\_\_\_\_ Use the problem solving process
- \_\_\_\_\_ Solve problems by applying formulas

**STANDARD D** Using algebraic concepts and procedures to represent problem solving.

- \_\_\_\_\_ Solve quadratic equations graphically and algebraically
- \_\_\_\_\_ Graph linear equations using value tables and slope
- \_\_\_\_\_ Solve systems of equations graphically and algebraically

**GOAL 9 Geometry** Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

**STANDARD A** Demonstrate and apply geometric concepts involving points, lines, planes and solids.

- \_\_\_\_\_ Identify basic geometric terms including parabolas and use them to define and classify
- \_\_\_\_\_ Draw geometric figures including parabola

**STANDARD B** Identify, describe, classify and compare relationships using points, lines, planes and solids.

- \_\_\_\_\_ Use formulas to find perimeter and area
- \_\_\_\_\_ Use Pythagorean Theorem, Distance between Points and Midpoint formula
- \_\_\_\_\_ Use concepts of slope and intercepts of linear equations

**STANDARD C** Construct convincing arguments and proofs to solve problems.

- \_\_\_\_\_ Analyze and select appropriate geometric relationships to solve problems.

**STANDARD D** Use trigonometric ratios and circular functions to solve problems.

- \_\_\_\_\_ Recognize sine, cosine, and tangent ratios.
- \_\_\_\_\_ Use the basic trigonometric functions to solve right triangles.

**GOAL 10 Data Collection and Statistical Analysis**

**Collect, organize and analyze data using statistical methods; predict results; and interpret uncertainty using concepts of probability.**

**STANDARD A Organize, describe, and make predictions from existing data.**

- \_\_\_\_\_ Find the mean, median and mode and range for a set of data.
- \_\_\_\_\_ Use tables, graphs, charts, and surveys to draw conclusions to make predictions.

**STANDARD B Formulate questions, design data collection methods, gather and analyze data and communicate findings.**

- \_\_\_\_\_ Collect, organize, analyze and interpret information to communicate finding.
- \_\_\_\_\_ Determine what conclusions are valid from a given set of information.

**STANDARD C Determine, describe and apply the probabilities of events.**

- \_\_\_\_\_ Determine probabilities and compute statistics to make predictions and inferences.
- \_\_\_\_\_ Find or predict the number of outcomes using the counting principle.
- \_\_\_\_\_ Use permutations or combinations to determine the number of outcomes.