

Applied Algebra

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.

- _____ Interpret, analyze, compare, and rename ratios, proportions, and percents.
- _____ Read, write, compare and order rational numbers and simple radicals.
- _____ Identify simple fraction, decimal, percent equivalents automatically.

STANDARD B

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

- _____ Determine appropriateness of calculator usage in computations with real numbers.
- _____ Perform computations with real numbers.
- _____ Apply order of operations in evaluating expressions with and without a calculator.
- _____ Perform operations with exponents.
- _____ Make predictions recognizing and using patterns.

STANDARD C

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

- _____ Use calculator to find decimal approximations for irrational numbers.
- _____ Use and share computational strategies for estimation and problem solving.
- _____ Apply place value in rounding to an appropriate value based on the problem situation.
- _____ Apply place value in comparing and ordering real numbers.
- _____ Use estimation to check reasonableness of answers.

STANDARD D

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

- _____ Interpret, analyze and compare ratios, percents and proportions.
- _____ Apply ratios and percents to meaningful situations using proportions and equations (such as consumer, technical, and scientific applications).

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 customary and metric units to find various measures with appropriate tools, such as tape measures, protractors, clocks, and scales.
- _____ Apply perimeter, area, surface area, and volume in problem solving situations using appropriate units.
- _____ Convert and compare units within and between measuring systems using conversion ratios.
- _____ Use units canceling to arrive at correct units of measure.

STANDARD B

Estimate measurements and determine acceptable levels of accuracy.

- _____ Estimate and measure in various contexts using appropriate units.
- _____ Determine and describe acceptable levels of accuracy in a variety of situations.

STANDARD C

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

- _____ Use spreadsheets to investigate and solve problems as well as communicate findings.
- _____ Select and use a variety of internet sites to investigate problems.
- _____ Solve problems using scaled drawings and similar figures.
- _____ Apply formulas to find and compare perimeter, area, surface area and volume of geometric figures.

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 simple function rules to create tables of values, algebraic expressions, or graphs.
- _____ Identify the slope of a line.
- _____ Apply direct and indirect variation.

STANDARD B

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

- _____ Differentiate between linear and non-linear patterns.
- _____ Graph points and solutions to inequalities on a number line.
- _____ Graph points, lines, and solutions to equalities and inequalities on the coordinate plane.
- _____ Solve systems of equations graphically through applications.
- _____ Interpret functions and their graphs.
- _____ Investigate linear programming.

STANDARD C

Solve problems using systems of numbers and their properties.

- _____ Solve two-step linear equations and inequalities algebraically.
- _____ Develop and use algebraic models to solve problems.

STANDARD D

Using algebraic concepts and procedures to represent problem solving.

- _____ Apply slope concepts as a rate of change.
- _____ Solve problems by applying formulas.
- _____ Write and solve equations represented by a given set of data.

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.

- _____ Draw prisms, pyramids, cones and cylinders.
- _____ Use appropriate terminology to define relationships and properties of geometric figures.
- _____ Perform basic compass and straightedge constructions.

STANDARD B

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

- _____ Identify and categorize basic geometric figures.
- _____ Use formulas to compare perimeter, area, surface area and volume of geometric figures.
- _____ Identify congruent and similar figures and their corresponding parts.
- _____ Identify similar triangles and their corresponding parts and use proportions to solve problems.

STANDARD C Construct convincing arguments and proofs to solve problems.

- _____ Identify and categorize basic geometric figures.
- _____ Analyze data, apply formulas and draw conclusions to solve meaningful geometric problems.

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

- _____ Use the Pythagorean theorem and its converse.
- _____ 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.

- _____ Determine and compare mean, mode, median, and range for a set of data points.
- _____ Collect data from tables, graphs, charts, arrays, schedules, experiments and surveys and draw conclusions.
- _____ Determine what conclusions are valid from a given set of information.

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

- _____ Collect, organize, and analyze information to make predictions and inferences.
- _____ Communicate findings with bar, line, circle, and picture graphs as appropriate.

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

- _____ Use logical counting algorithms to determine the number of outcomes of an event.
- _____ Use probability of dependent and independent events to predict results of an experiment.