

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

GRADE 5

State Goal 6

The students will be able to demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, division), patterns, ratios, and proportions.

STANDARD A

The students will be able to demonstrate knowledge and use of numbers and their representations in a broad range of theoretical and practical settings.

- _____ Read and identify numbers in to billions and beyond.
- _____ Apply knowledge of place value to a variety of numeration systems and models such as bases and abacuses.
- _____ Identify, read, write, compare, and model decimals to the thousandths place.
- _____ Explore place value of decimals beyond the thousandths place.
- _____ Apply knowledge of prime and composite numbers, greatest common factors, divisors, and least common multiple to set theory.
- _____ Use Roman numerals I, V, X and explore Roman numerals L, C, and M.
- _____ Analyze and use area models to determine fractional parts.
- _____ Demonstrate the relationship of decimals and fractions.

STANDARD B

The students will be able to investigate, represent, and solve problems using number facts, operations (addition, subtraction, multiplication, division) and their properties, algorithms, and relationships.

- _____ Multiply by three digits using a variety of algorithm models and including decimals.
- _____ Divide by two digits including decimals.
- _____ Add and subtract fractions with like denominators with and without physical models and explore adding and subtracting of fractions with unlike denominators.
- _____ Demonstrate multiplication and division of fractions.
- _____ Add and subtract decimals to thousandths.
- _____ Multiply by three digit decimals and dividing by two digit decimals.
- _____ Apply problem solving strategies including working backwards, making a table, finding patterns, making an organized list, drawing a picture, and guess and check.
- _____ Solve problems using Venn diagrams.
- _____ Use diagrams and matrices to solve logic problems.
- _____ Use advanced counting strategies such as the Gaussian method and tree diagrams.

STANDARD C

The students will be able to compute and estimate using mental mathematics, paper-and-pencil methods, calculators, and computers.

- _____ Estimate solutions in all problem solving situations.
- _____ Round to nearest tenth, hundredth, and thousandth.
- _____ Apply mental math strategies to all four basic operations using distribution, Gaussian method, etc.
- _____ Apply understanding of decimal, fraction, and percent relationships to improve mental math.
- _____ Use and apply integers in all basic operations.

STANDARD D

The students will be able to solve problems using comparison of quantities, ratios, proportions, and percents.

- _____ Relate decimals, fractions, and percents.
- _____ Write ratios to compare sets of objects.
- _____ Explore proportions by identifying equivalent ratios.
- _____ Explore 10%, 20%, 50%, etc. of a quantity.
- _____ Solve percent problems.

State Goal 7

The students will be able to estimate, make, and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

STANDARD A

The students will be able to measure and compare quantities using appropriate units, instruments, and methods.

- _____ Measure length, distance, weight, volume, and temperature in English and metric units.
- _____ Identify and express values to \$1,000.
- _____ Estimate and make change.
- _____ Solve problems and puzzles across time zones, decades, and centuries.
- _____ Measuring angles to within three degree accuracy.

STANDARD B

The students will be able to estimate measurements and determine acceptable levels of accuracy.

_____ Convert equivalent units of time measurement.

STANDARD C

The students will be able to select and use appropriate technology, instruments and formulas to solve problems, interpret results, and communicate findings.

_____ Measure length, distance, weight, volume, and temperature using customary and metric units.

_____ Convert equivalent units of time measurement.

State Goal 8

The students will be able to use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems, and predict results.

STANDARD A

The students will be able to describe numerical relationships using variables and patterns.

_____ Use symbols of modular math such as + and x.

_____ Use non-standard mathematical symbols such as ^ for negative numbers.

_____ Demonstrate understanding and use of order of operations with and without parenthesis.

_____ Explore and manipulate numbers in a variety of bases.

STANDARD B

The students will be able to interpret and describe numerical relationships using tables, graphs, and symbols.

_____ Identify and complete number and geometric patterns with and without physical models, e.g. Fibonacci sequence, triangular numbers, square numbers, and algebraic patterns.

STANDARD C

The students will be able to solve problems using systems of numbers and their properties.

STANDARD D

The students will be able to use algebraic concepts and procedures to represent and solve problems.

_____ Graph ordered pairs in a four quadrant coordinate system using north, south, east, and west for orientation and explore using integers for orientation.

_____ Explore solving two-step linear equations utilizing any of the four basic operations, e.g. $2x + 14 = 28$.

_____ Apply ideas of union and intersection in solving problems.

State Goal 9

The students will be able to use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

STANDARD A

The students will be able to demonstrate and apply geometric concepts involving points, lines, planes, and space.

_____ Identify different types of polygons.

_____ Explore spatial problem solving.

_____ Solve problems that require students to apply formulas to find perimeter, area, and volume.

STANDARD B

The students will be able to identify, describe, classify, and compare relationships using points, lines, planes, and solids.

_____ Identify concepts of lines such as intersecting, parallel, and perpendicular.

_____ Explore and develop circle relationships such as radius, diameter, circumference, pi, and degrees.

_____ Create congruent and similar figures and shapes which have one or more lines of symmetry.

_____ Identify vertices, faces, and edges of three-dimensional figures.

_____ Create patterns that tessellate.

STANDARD C

The students will be able to construct convincing arguments and proofs to solve problems.

_____ Create reflections across 2 axes (double mirrors).

_____ Explore rotations.

_____ Explore concave and convex vertices.

STANDARD D

The students will be able to use trigonometric ratios and circular functions to solve problems.

State Goal 10

The students will be able to collect, organize, and analyze data using statistical methods; predict results; and interpret uncertainty using concepts of probability.

STANDARD A

The students will be able to organize, describe, and make predictions from existing data.

_____ Apply ideas of mean, median, and mode.

STANDARD B

The students will be able to formulate questions, design data collection methods, gather and analyze data, and communicate findings.

_____ Develop and implement a plan for collecting and analyzing data.

_____ Read, interpret, and construct graphs, tables, schedules, time lines, and charts.

_____ Wonder and pose mathematical questions.

STANDARD C

The students will be able to determine, describe, and apply the probabilities of events.

_____ Apply probability to real life situations.

_____ Apply strategies to solve problems of combinations and permutations.