Revised College and Career Readiness Standards for Mathematics
July 2018

I. Numeric Reasoning

    A. Number representations and operations

        1. Compare relative magnitudes of rational and irrational numbers, and understand that numbers can be represented in different ways.

        2. Perform computations with rational and irrational numbers.

    B. Number sense and number concepts

        1. Use estimation to check for errors and reasonableness of solutions.

        2. Interpret the relationships between the different representations of numbers.

    C. Systems of measurement

        1. Select or use the appropriate type of method, unit, and tool for the attribute being measured.

        2. Convert units within and between systems of measurement.

II. Algebraic Reasoning

    A. Identifying expressions and equations

        1. Explain the difference between expressions and equations.

    B. Manipulating expressions

        1. Recognize and use algebraic properties, concepts, and algorithms to combine, transform, and evaluate expressions (e.g., polynomials, radicals, rational expressions).

    C. Solving equations, inequalities, and systems of equations and inequalities

        1. Describe and interpret solution sets of equalities and inequalities.

        2. Explain the difference between the solution set of an equation and the solution set of an inequality.

        3. Recognize and use algebraic properties, concepts, and algorithms to solve equations, inequalities, and systems of linear equations and inequalities.

    D. Representing relationships

        1. Interpret multiple representations of equations, inequalities, and relationships.

        2. Convert among multiple representations of equations, inequalities, and relationships.

III. Geometric and Spatial Reasoning

    A. Figures and their properties

        1. Recognize characteristics and dimensional changes of two- and three-dimensional figures.

2. Form and validate conjectures about one-, two-, and three-dimensional figures and their properties.

3. Recognize and apply right triangle relationships including basic trigonometry.

B. Transformations and symmetry

   1. Identify transformations and symmetries of figures.

   2. Use transformations to investigate congruence, similarity, and symmetries of figures

C. Connections between geometry and other mathematical content strands

   1. Make connections between geometry and algebraic equations.

   2. Make connections between geometry, statistics, and probability.

D. Measurements involving geometry and algebra

   1. Find the perimeter and area of two-dimensional figures.

   2. Determine the surface area and volume of three-dimensional figures.

   3. Determine indirect measurements of geometric figures using a variety of methods.

IV. Probabilistic Reasoning

A. Counting principles

   1. Determine the nature and the number of elements in a finite sample space.

B. Computation and interpretation of probabilities

   1. Compute and interpret the probability of an event and its complement.

   2. Compute and interpret the probability of [conditional and] compound events.

C. Measurement involving probability

   1. Use probability to make informed decisions.

V. Statistical Reasoning

A. Design a study

   1. Formulate a statistical question, plan an investigation, and collect data.

B. Describe data

   1. Classify types of data.

   2. Construct appropriate visual representations of data.

   3. Compute and describe the study data with measures of center and basic notions of spread.

   4. Describe patterns and departure from patterns in the study data.

C. Analyze, interpret, and draw conclusions from data

   1. Analyze data sets using graphs and summary statistics.

2. Analyze relationships between paired data using spreadsheets, graphing calculators, or statistical software.

3. Make predictions using summary statistics.

4. Identify and explain misleading uses of data.

VI. Functions

A. Recognition and representation of functions

1. Recognize if a relation is a function.

2. Recognize and distinguish between different types of functions.

B. Analysis of functions

1. Understand and analyze features of a functions.

2. Algebraically construct and analyze new functions.

C. Model real-world situations with functions

1. Apply known functions to model real-world situations.

2. Develop a function to model a situation.

VII. Problem Solving and Reasoning

A. Mathematical problem solving

1. Analyze given information.

2. Formulate a plan or strategy.

3. Determine a solution.

4. Justify the solution.

5. Evaluate the problem-solving process.

B. Proportional reasoning

1. Use proportional reasoning to solve problems that require fractions, ratios, percentages, decimals, and proportions in a variety of contexts using multiple representations.

C. Logical reasoning

1. Develop and evaluate convincing arguments.

2. Understand attributes and relationships with inductive and deductive reasoning.

D. Real-world problem solving

1. Interpret results of the mathematical problem in terms of the original real-world situation.

2. Evaluate the problem-solving process.

VIII. Communication and Representation

A. Language, terms, and symbols of mathematics

1. Use mathematical symbols, terminology, and notation to represent given and unknown information in a problem.

2. Use mathematical language to represent and communicate the mathematical concepts in a problem.

3. Use mathematical language for reasoning, problem solving, making connections, and generalizing.

B. Interpretation of mathematical work

1. Model and interpret mathematical ideas and concepts using multiple representations.

2. Summarize and interpret mathematical information provided orally, visually, or in written form within the given context.

C. Presentation and representation of mathematical work

1. Communicate mathematical ideas, reasoning, and their implications using symbols, diagrams, models, graphs, and words.

2. Create and use representations to organize, record, and communicate mathematical ideas.

3. Explain, display, or justify mathematical ideas and arguments using precise mathematical language in written or oral communications.

IX. Connections

A. Connections among the strands of mathematics

1. Connect and use multiple key concepts of mathematics in situations and problems.

2. Connect mathematics to the study of other disciplines.

B. Connections of mathematics to nature, real-world situations, and everyday life

1. Use multiple representations to demonstrate links between mathematical and real-world situations.

2. Understand and use appropriate mathematical models in the natural, physical, and social sciences.

3. Know and understand the use of mathematics in a variety of careers and professions.