



Test Framework

Elementary Education Subtest II (111)

May 2023

Content Domain	Range of Competencies	Approximate Percentage of Test Score
I. Mathematics	0001–0003	43%
II. Science	0004–0006	43%
III. The Arts, Health, and Fitness	0007	14%

MATHEMATICS

0001: Apply knowledge of numeration, number sense, and mathematical operations.

- Demonstrate knowledge of properties of numbers and number systems, operations, place value, rounding, comparing and ordering numbers, and equivalent representations of numbers.
- Demonstrate knowledge of prime and composite numbers, divisibility rules, least common multiple, and greatest common factor.
- Solve problems involving integers, rational numbers, fractions, decimals, ratios, proportions, percents, exponents, and scientific notation.
- Apply knowledge of basic concepts of probability, including the use of simulations and counting procedures to estimate probabilities.
- Demonstrate knowledge of computation, including the use of mental math and estimation.
- Apply knowledge of various strategies and procedures in problem solving using numbers and operations.
- Interpret and apply knowledge of verbal descriptions and mathematical language and symbols to express numbers and operations.
- Interpret and apply knowledge of a variety of diagrams, models, charts, manipulatives, and other tools used to represent mathematical concepts and real-world situations using numbers and operations.

0002: Apply knowledge of patterns, algebra, and functions.

- Recognize patterns in numbers, shapes, and data and ways to use variables, expressions, equations, and inequalities to communicate quantitative relationships.
- Apply knowledge of patterns to model real-world situations and make predictions.
- Recognize types and properties of functions.
- Apply knowledge of various strategies and procedures in solving equations and real-world problems using patterns, algebra, and functions.
- Interpret and apply knowledge of verbal descriptions and mathematical language and symbols to express quantitative relationships and solve problems involving patterns, algebra, and functions.
- Interpret and apply knowledge of a variety of diagrams, models, charts, manipulatives, and other tools used to represent mathematical concepts and real-world situations using patterns, algebra, and functions.

0003: Apply knowledge of geometry, measurement, and data analysis.

- Recognize types and properties of lines, angles, and two- and three- dimensional shapes, including symmetry, congruence, and similarity.
- Solve problems involving perimeter, area, volume, geometric transformations, measurement, scale, and coordinate systems.
- Identify and use appropriate measurement units, tools, and techniques in various situations.
- Apply knowledge of statistical measures (e.g., mean, median, mode, range, standard deviation) to describe and analyze data.
- Convert measurements within and between the metric and customary systems.
- Apply knowledge of various strategies and procedures in solving real-world problems using geometry, measurement, and data analysis.
- Interpret and apply knowledge of verbal descriptions and mathematical language and symbols to express quantitative relationships and solve problems involving geometry, measurement, and data analysis.
- Interpret and apply knowledge of a variety of diagrams, models, charts, manipulatives, and other tools used to represent mathematical concepts and real-world situations using geometry, measurement, and data analysis.

SCIENCE

0004: Apply knowledge of the life sciences.

- Apply knowledge of the characteristics and life processes of plants, animals, and other living organisms.
- Demonstrate knowledge of the multiple ways in which organisms are ordered and classified and how species change over time.
- Recognize the life cycles and reproductive patterns of common organisms.
- Apply knowledge of the basic principles of heredity to the transmission of traits from one generation to the next.
- Analyze the interactions between organisms and their environment and the characteristics of and interactions between populations of organisms in an ecosystem.
- Apply knowledge of science and engineering practices to the life sciences.
- Apply knowledge of crosscutting concepts (i.e., patterns; cause and effect; scale, portion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) to the life sciences.

0005: Apply knowledge of Earth and space sciences.

- Recognize types and characteristics of objects in the solar system and universe and the effects of the relative positions and motions of the sun, Earth, and moon.
- Apply knowledge of the composition, structure, landforms, and processes of Earth's geologic system and how this system interacts with other Earth systems.
- Apply knowledge of the composition, structure, and processes of Earth's hydrologic and atmospheric systems, including weather and climate, and how these systems interact with each other and with Earth's geologic system.
- Identify types and characteristics of renewable and nonrenewable natural resources and their uses and management.
- Apply knowledge of science and engineering practices to Earth and space sciences.
- Apply knowledge of crosscutting concepts (i.e., patterns; cause and effect; scale, portion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) to Earth and space sciences.

0006: Apply knowledge of the physical sciences.

- Demonstrate knowledge of the composition, structure, and properties of matter and the difference between physical and chemical changes in matter.
- Recognize the effects of various types of forces (e.g., friction, gravity, magnetism) on objects in given situations.
- Apply knowledge of the properties and uses of simple machines and tools.
- Apply knowledge of the properties of light, sound, electricity, and magnetism.
- Recognize forms of energy, energy sources, and processes of energy transfer and transformations.
- Apply knowledge of science and engineering practices to the physical sciences.
- Apply knowledge of crosscutting concepts (i.e., patterns; cause and effect; scale, portion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) to the physical sciences.

THE ARTS, HEALTH, AND FITNESS

0007: Apply knowledge of the arts and fundamental concepts of health and fitness.

- Identify basic terms and elements associated with music, drama, dance, and the visual arts.
- Recognize basic techniques, tools, and processes for creating and performing works in the various arts.
- Demonstrate knowledge of the ways the arts can be used as a form of communication, self-expression, and social expression and the relationships between the arts, other content areas, and everyday life.
- Identify the basic structures and functions of the human body, common diseases, and illnesses and how to prevent or treat them.
- Demonstrate knowledge of developmentally appropriate relationships and interactions with others (e.g., peers, teachers, parents/guardians, caregivers, families).
- Apply knowledge of principles, practices, and skills for maintaining physical, mental, and emotional health and safety for reducing health risks.
- Identify the components of health-related fitness, developmental milestones, and appropriate activities for promoting the development of locomotor, nonlocomotor, manipulative, and perceptual awareness skills in students.
- Apply knowledge of nutritional principles that influence health and development and the relationships between health and fitness, other content areas, and everyday life.