



ESSENTIAL ACADEMIC SKILLS SUBTEST III: MATHEMATICS

Test Framework

0001 Understand number properties and number operations.

- ▶ Demonstrate knowledge of place value and the relative magnitude of numbers.
- ▶ Use addition, subtraction, multiplication, and division of whole numbers in multidigit computations.
- ▶ Identify equivalent ways of representing integers, fractions, decimals, and percents, including the use of exponents and scientific notation.
- ▶ Apply operations with positive and negative integers, fractions, decimals, and percents.
- ▶ Solve word problems involving integers, fractions, decimals, percents, ratios, and proportions.

0002 Understand fundamental principles of algebra.

- ▶ Evaluate algebraic expressions by substituting numbers for variables.
- ▶ Solve linear algebraic equations and inequalities in one variable.
- ▶ Identify equivalent algebraic expressions.
- ▶ Graph ordered pairs and number relationships presented in tabular or symbolic form.
- ▶ Identify the linear equation that best represents data presented in tabular or graphic form.

0003 Understand measurement principles and geometry concepts.

- ▶ Identify a measurement or measurement unit needed to solve a problem.
- ▶ Convert units within and between standard and metric measurement systems.
- ▶ Solve problems involving lines, line segments, and angles.
- ▶ Analyze fundamental properties of triangles, quadrilaterals, and circles.
- ▶ Solve problems involving the length, perimeter, and area of basic shapes and the surface area and volume of rectangular solids.
- ▶ Solve real-world problems involving basic measurement and geometric concepts, including the Pythagorean theorem.

0004 Understand probability and statistics.

- ▶ Calculate the probability of a given outcome.
- ▶ Analyze information presented in tables, line graphs, scatter plots, pictographs, bar graphs, histograms, and pie charts.
- ▶ Recognize the appropriate graphic representation of data.
- ▶ Compute and interpret the mean, median, and mode of data.
- ▶ Demonstrate knowledge of the concepts of range, standard deviation, and spread.
- ▶ Recognize appropriate and inappropriate uses of basic statistics.

0005 Understand problem solving, reasoning, and mathematical communication.

- ▶ Estimate the solution to a given problem.
- ▶ Evaluate the reasonableness of a solution to a given computation or problem.
- ▶ Use algorithms (i.e., a set of instructions) to perform a given calculation or solve a given problem.
- ▶ Use inductive reasoning to identify missing terms in numerical and graphical patterns.
- ▶ Use deductive reasoning to draw conclusions and evaluate arguments.
- ▶ Translate between written English and mathematical terminology, concepts, and notation.