

**SC High School Assessment Program (HSAP)
Test Blueprint – Mathematics**

Number and Operations		15–16 points
N 1	The student will understand numbers, ways of representing numbers, relationships among numbers, and number systems. <ul style="list-style-type: none">▪ Represent a number using scientific notation in applied situations.▪ Find square roots.▪ Find the value of numbers using exponents (e.g., 2^9, 10^6).▪ Represent a percent as a decimal or fraction and vice versa.▪ Use number sense.▪ Compare and order fractions, decimals, and percents.▪ Apply the commutative, associative, distributive, equality, and identity properties, including order of operations, to simplify mathematical expressions, equations, and inequalities.▪ Justify the steps in solving equations and inequalities.	
N 2	The student will compute with rational numbers and make reasonable estimates in applied situations. <ul style="list-style-type: none">▪ Add, subtract, multiply, and divide rational numbers (e.g., fractions, decimals, percents, integers) in real-world situations.▪ Use computational skills to solve applied problems with ratios and proportions.▪ Perform operations of addition, subtraction, and scalar multiplication to solve problems using matrices in applied situations.▪ Use rounding skills to estimate computations.▪ Determine mathematically reasonable solutions using supporting data.	
Algebra		19–20 points
A 1	The student will understand and apply patterns, relations, and functions. <ul style="list-style-type: none">▪ Find the next term of a pattern or sequence.▪ Generalize a pattern.▪ Describe, extend, analyze, and create a wide variety of patterns to investigate relationships and solve problems.▪ Interpret situations in terms of given graphs.▪ Identify situations that can and cannot be represented by a line. Understand the effects of changing the slope and y-intercept on graphs, linear equations, and in applied situations.▪ Use the laws of exponents.	
A 2	The student will represent, analyze, and model situations using mathematical structures and algebraic symbols.	

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- Evaluate expressions.
 - Find specific function values.
 - Simplify polynomial expressions.
 - Perform polynomial arithmetic.
 - Use symbols to represent unknowns.
 - Translate an expression, equation, or inequality from words and vice versa.
 - Represent and translate linear functions as equations and inequalities from tables, and graphs, and vice versa.
 - Identify a linear equation given characteristics of the line.
 - Solve linear equations.
 - Solve linear inequalities.
 - Solve systems of linear equations.
 - Solve simple quadratic equations.

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Test Blueprint – Mathematics (continued)

Measurement and Geometry	19–20 points
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MG 1	The student will apply appropriate techniques, tools, and formulas to determine measurements and solve problems.
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- Find the perimeter and area of 2-dimensional figures.
- Use formulas to find volume and surface areas of 3-dimensional objects (e.g., prisms, pyramids, cylinders).
- Approximate and find volumes and areas for irregular figures.
- Use dimensional analysis to convert units and check measurement computations.
- Convert and use appropriate units of measure (customary and metric).

MG 2	The student will analyze characteristics of two- and three-dimensional geometric shapes, understand geometric relationships, and apply spatial relationships using coordinate geometry.
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- Identify and apply properties of circles, polygons, and angles.
- Analyze the properties of spheres, cylinders, prisms and pyramids.
- Identify attributes of congruent figures.
- Identify attributes of similar figures.
- Use proportions to solve problems involving similar figures, including scale drawings.
- Identify the congruent and supplementary relationships of the angles formed by parallel lines and a transversal.
- Determine the resulting change in area and volume of a figure when one or more dimensions are changed.
- Solve applied problems using the Pythagorean Theorem.
- Given two points, find the slope between them.
- Identify missing coordinates needed to form a specific polygon.
- Translate, reflect, rotate, and dilate figures on the coordinate plane.

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Data Analysis and Probability	8 points
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DP 1	The student will use appropriate statistical methods to analyze data and apply basic concepts of probability.
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- Represent and interpret data using circle graphs, bar graphs, scatterplots, histograms, stem-and-leaf plots, box-and-whisker plots, and matrices.
- Determine positive, negative, or no correlation between data.
- Find the equation of the line that best fits a set of data (line of best fit).
- Determine the line of best fit.
- Identify the graph of the function that best models a data set.
- Find the mean, median, mode, and range for a set of data.
- Find the number of possible outcomes of an event.
- Represent possible outcomes in the form of an organized list, chart, or tree diagram.
- Calculate the probability of a simple event.
- Calculate the probability of a complementary event.

Integrated Response Questions**9 points**

The test will include three integrated-response questions (IRs). IRs are 3-point constructed-response items that integrate content standards and process standards. IRs require students to use the process skills of problem solving, communication, representations, and connections to apply a solution strategy, and communicate and represent the result.

Total: 71 points