Maryland
STATE DEPARTMENT OF EDUCATION

MCAP Algebra II

High Level Blueprint

This High-Level Blueprint describes the structure and content of the Maryland Comprehensive Assessment Program (MCAP) Algebra II Mathematics Assessment by sub-claim.

Content Subclaim

The MCAP Algebra II assessment contains 23 operational items designed to elicit evidence to support the Content Subclaim. Content Subclaim items are worth 1-point, are machine scored, and align to the Algebra II evidence statements. Refer to the MCAP Algebra II Evidence Statement document for more information on the content evidence statements.

Conceptual Category: Number and Quantity **Number of items: 3**

Code	Domain & Cluster
N.RN	The Real Number System A. Extend the properties of exponents to rational exponents.
N.Q	Quantity A. Reason quantitatively and use units to solve problems.
N.CN	The Complex Number System A. Perform arithmetic operations with complex numbers. C. Complex numbers in polynomial identities and equations.

Conceptual Category: Algebra **Number of items: 8**

Code	Domain & Cluster
A.SSE	Seeing Structure in Expressions A. Interpret the structure of expressions. B. Write expressions in equivalent form to solve problems.
A.APR	Arithmetic with Polynomials and Rational Expressions B. Understand the relationship between zeros and factors of polynomials. D. Rewrite rational expressions.
A.CED	Creating Equations A. Create equations that describe numbers or relationships.

Code	Domain & Cluster
A.REI	Reasoning with Equations and Inequalities A. Understand solving equations as a process of reasoning and explain the reasoning. B. Solve equations and inequalities in one variable. C. Solve systems of equations. D. Represents and solve equations and inequalities graphically.

Conceptual Category: Functions **Number of items: 11**

Code	Domain & Cluster
F.IF	Interpreting Functions A. Understand the concept of a function and use function notation. B. Interpret functions that arise in applications in terms of the context. C. Analyze functions using different representations.
F.BF	Building Functions A. Build a function that models a relationship between two quantities. B. Build new functions from existing functions.
F.LE	Linear, Quadratic, and Exponential Models A. Construct and compare linear, quadratic, exponential models & solve problems. B. Interpret expressions for functions in terms of the situation they model.
T.TF	Trigonometric Functions A. Extend the domain of trigonometric functions using the unit circle. B. Model periodic phenomena with trigonometric functions. C. Prove and apply trigonometric identities.

Conceptual Category: Statistics **Number of items: 1**

Code	Domain & Cluster
S.ID	Interpreting Categorical and Quantitative Data B. Summarize, represent, and interpret data on two categorical quantitative variables.

Total number of Operational Items: 23

Total Number of Points : 23

Reasoning Subclaim

The MCAP Algebra II assessment includes 6 operational items that elicit evidence to support the Reasoning Subclaim. Each assessment includes machine-scored and human-scored (constructed response) reasoning items. Reasoning items may address any of the Algebra II evidence statements. Refer to the MCAP Algebra II Evidence Statement document for more information on the reasoning evidence statements.

Evidence Statements

A2.R.1 Given an equation reason about the number or nature of the solutions.

A2.R.2 Given a system of equations reason about the number or nature of the solutions.

A2.R.3 Reasoning based on the principle that the graph of an equation and inequalities in two variables is the set of all its solutions plotted in the coordinate plane.

A2.R.4 Identify an option that would refute a conjecture/claim.

A2.R.5 Identify a correct method and justification given two or more chains of reasoning.

A2.R.6 Given a proposition determine cases where the proposition is true or false.

A2.R.7 Identify an unstated assumption that would make a problem well-posed or make a particular method viable.

A2.R.8 Given an equation or system of equations, present the solution steps as a logical argument that concludes with the set of solutions (if any).

A2.R.9 Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures about functions.

A2.R.10 Express reasoning about transformations of functions.

A2.R.11 Express reasoning about linear and exponential growth.

Number of Machine Scored Items – Four (4) 1-point items

Number of Constructed Response Items – Two (2) 4-point items

Total Number of Points: 12

Modeling Subclaim

The MCAP Algebra II assessment includes 6 operational items that elicit evidence to support the Modeling Subclaim. Each assessment includes machine-scored and human-scored (constructed response) modeling items. Modeling items may address any of the Algebra II evidence statements. Refer to the MCAP Algebra II Evidence Statement document for more information on the modeling evidence statements.

Evidence Statements

A2.M.1 Choose between competing mathematical models to solve real-world problems.

A2.M.2 Construct a mathematical model to solve a problem.

A2.M.3 Validate a given model and make improvement.

A2.M.4 Interpret the solution to a real-world problem in terms of context.

A2.M.5 Compare the result from a model with real world data.

A2.M.6 Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge.

A2.M.7 Identify information or assumptions needed to solve a problem.

A2.M.8 Provide a reasoned estimate of a quantity needed to solve a problem.

Number of Machine Scored Items – Four (4) 1-point items

Number of Constructed Response Items – Two (2) 4-point items

Total Number of Points: 12