

Mathematics Assessment Blueprint – Grade 8

This blueprint describes the structure and content of the Grade 8 Maryland System of Testing Academic Readiness (MSTAR) Math Assessment. The assessment is administered as a [Multi-Stage Adaptive Test](#) and includes operational items organized into the following reporting categories: Content, Modeling, and Reasoning.

For detailed Maryland content standards and the [Numeracy Development Framework](#) that defines the essential knowledge, skills, and understandings expected across grade levels, please visit the [MSDE Content Standards and Frameworks](#) page.

For a variety of resources that support state assessments, such as calendars, accessibility information, and guides by audience, please visit the [Maryland State Assessment page](#).

CONTENT REPORTING CATEGORY – 52% OF MSTAR TEST FORM

Domain	Standard Clusters Available for Assessment	Percentage of Test
Number and Operation Sense (NOS)	8.NOS.A Reason with irrational numbers. 8.NOS.B Reason with exponents to express and interpret quantities.	3% – 9%
Algebraic Thinking (AT)	8.AT.A Use proportional relationships to represent and reason about linear equations. 8.AT.B Make sense of and solve equations, inequalities, and systems of equations. 8.AT.C Reason about functions. 8.AT.D Model with functions.	30% – 36%
Geometric Reasoning and Measurement (GR)	8.GR.A Make conjectures about and verify geometric relationships. 8.GR.B Apply the Pythagorean theorem to reason about right triangles.	6% – 9%
Reasoning and Data Statistics (DS)	8.DS.A Make sense of statistical inquiry. 8.DS.B Describe, analyze, and compare data using visual and numerical representations to model situations and draw inferences. 8.DS.C Model and analyze probability to interpret chance events, compare models with observed data, and make predictions.	6% – 12%

REASONING REPORTING CATEGORY – 24% OF MSTAR TEST FORM

Reporting Category	Standards Available for Assessment	Percentage of Test
Reasoning (R)	8.R.1 Use visual, symbolic, or contextual representations to explain mathematical ideas. 8.R.2 Identify and critique errors in reasoning, misapplied procedures, or invalid assumptions, and provide a mathematically valid alternative. 8.R.3 Construct coherent chains of reasoning that connect mathematical properties, ideas, and evidence, such as examples or counterexamples, to support or refute mathematical statements or claims. 8.R.4 Identify and extend patterns or regularities to form general rules and justify their validity using mathematical reasoning.	24%

MODELING REPORTING CATEGORY – 24% OF MSTAR TEST FORM

Reporting Category	Standards Available for Assessment	Percentage of Test
Modeling (M)	8.M.1 Formulate a question about a particular context that can be answered using mathematics. 8.M.2 Determine the information needed and what assumptions must be made to answer a mathematical question about a context. 8.M.3 Represent a context mathematically by selecting and applying appropriate concepts, tools, and representations to define variables, model relationships, and/or identify constraints. 8.M.4 Use a mathematical model to perform computations, make predictions, or answer the question posed about a context. 8.M.5 Interpret the results or conclusions of a mathematical model in terms of the original context. 8.M.6 Critique the validity of a mathematical model and its conclusions. Revise assumptions, representations, or mathematical approaches based on the context, new understanding, or additional information.	24%

OVERALL TEST

Total Number of Items: **29-30**

Breakdown by Reporting Category

Test Form Information	Details
Content (NOS, AT, GR, and DS)	18 points
Reasoning	8 points
Modeling	8 points
Total Points	34 points overall
Total Testing Time	120 Minutes (2 hours)

Operational Form Development Notes:

- The item types may vary by form and content area based on the content being assessed.
- The Reasoning and Modeling reporting categories each contain one 3-point, and one 4-point constructed response (CR) item.
- The rest of the items on the form are 1-point machine scored items. Approximately 50-65% are Multiple Choice (MC) or Multiple Select (MS) items, and approximately 20-35% are Technology Enhanced Item (TEI) types.