Maryland
STATE DEPARTMENT OF EDUCATION

Holistic Mathematics Rubrics

Grade 3 – High School

The Holistic Mathematics Rubrics provide a framework for evaluating student work by describing sample characteristics for each score point. Scores are based on an overall evaluation of what students demonstrate rather than what is missing. Responses do not need to include every listed characteristic to earn a particular score. The Modeling and Reasoning Rubrics build on this approach by describing how students demonstrate their understanding through the ways they represent and make sense of problems, explain and justify their thinking, and connect mathematical ideas.

Mathematical Modeling

3 POINT MODELING CONSTRUCTED RESPONSE ITEMS

3 Points	2 Points	1 Point	0 Points
A three-point response provides full and complete evidence of the modeling process used to solve a real-world problem. The response may: • identify the problem that needs to be solved. • determine information that is needed to solve the problem • communicate an accurate, organized solution path that is aligned to the problem using appropriate, effective, and precise representations. • contain minor flaws that do not detract from correct modeling or demonstration of a thorough understanding. • evaluate or validate a partial or complete solution and show how to improve or refine the solution	**A two-point response provides partial evidence of the modeling process used to solve a real- world problem.** The response may: • partially identify the problem that needs to be solved. • evaluate or validate a partial or complete solution and attempt to improve or refine the solution. • determine some of the information that is needed to solve the problem. • include a partial solution path that may be incomplete. • contain some errors in identifying the mathematics that is needed to solve the problem.	**A one-point response provides limited evidence of the modeling process used to solve a real- world problem.** The response may: • partially or incorrectly identify the problem that needs to be solved. • determine a minimal amount of the information that is needed to solve the problem. • include an incomplete or unorganized solution path. • contain errors in identifying the mathematics that is needed to solve the problem. • contain the correct solution, but work is limited or missing. • evaluate or validate a partial or complete solution but does not show how to improve or refine the solution.	**A zero-point response is completely incorrect, incoherent or irrelevant.**

4 POINT MODELING CONSTRUCTED RESPONSE ITEMS

4 Points	3 Points	2 Points	1 Point	0 Points
A four-point response provides full and complete evidence of the modeling process used to solve a real-world problem. The response may: • identify the problem that needs to be solved. • determine information that is needed to solve the problem. • communicate an accurate, organized solution path that is aligned to the problem using appropriate, effective, and essentially precise representations. • contain minor flaws that do not detract from correct modeling or demonstration of a thorough understanding. • evaluate or validate a partial or complete solution and show how to improve or refine the solution.	**A three-point response provides evidence of the modeling process used to solve a real-world problem.** The response may: • identify most of the problem that needs to be solved. • determine most of the information that is needed to solve the problem. • communicate an accurate, organized solution path that is aligned to the problem using appropriate, effective, and precise representations with minor flaws. • evaluate or validate a partial or complete solution and show how to improve or refine the solution, but the improvement or refinement may include minor flaws.	**A two-point response provides partial evidence of the modeling process used to solve a real- world problem.** The response may: • partially identify the problem that needs to be solved. • evaluate or validate a partial or complete solution and attempt to improve or refine the solution. • determine some of the information that is needed to solve the problem. • include a partial solution path that may be incomplete. • contain some errors in identifying the mathematics that is needed to solve the problem.	**A one-point response provides limited evidence of the modeling process used to solve a real-world problem.** The response may: • partially or incorrectly identify the problem that needs to be solved. • determine a minimal amount of the information that is needed to solve the problem. • evaluate or validate a partial or complete solution but does not show how to improve or refine the solution. • include an incomplete or unorganized solution path. · • contain errors in identifying the mathematics that is needed to solve the problem. • contain the correct solution, but work is limited or missing.	**A zero-point response is completely incorrect, incoherent or irrelevant.**

Mathematical Reasoning

3 POINT REASONING CONSTRUCTED RESPONSE ITEMS

3 Points	2 Points	1 Point	0 Points
A three-point response for reasoning items provides evidence of correct, complete, and appropriate mathematical reasoning. The response may: • be clear and well developed with logical reasoning communicated by the use of precise and appropriate representations, symbols, drawings, or mathematical vocabulary. • contain minor flaws that do not detract from the correct reasoning or demonstration of a thorough understanding.	**A two-point response for reasoning items provides evidence of partially correct mathematical reasoning.** The response may: • display an incomplete reasoning process. • contain minor flaws that detract from the correct reasoning or demonstration of a thorough understanding.	**A one-point response for reasoning items provides limited evidence of correct mathematical reasoning.** The response may: • demonstrate the beginning of a valid chain of reasoning. • reflect a lack of essential understanding of the underlying mathematical concepts. • contain the correct solution, but work is limited or missing. • contain errors in the fundamental mathematical procedures or reasoning. • contain omissions or irregularities that lead to an inadequate solution.	**A zero-point response is completely incorrect, incoherent or irrelevant.**

4 POINT REASONING CONSTRUCTED RESPONSE ITEMS

4 Points	3 Points	2 Points	1 Point	0 Points
A four-point response for reasoning items provides evidence of correct, complete, and appropriate mathematical reasoning. The response may: • be clear and well developed with logical reasoning communicated by the use of precise and appropriate representations, symbols, drawings, or mathematical vocabulary. • demonstrate a thorough understanding of the mathematics. • contain minor flaws that do not detract from the correct reasoning or demonstration of a thorough understanding.	**A three-point response for reasoning items provides evidence of essentially correct, essentially complete, and essentially appropriate mathematical reasoning.** The response may: • be clear and developed with logical reasoning communicated by the use of essentially precise and appropriate representations, symbols, drawings, or mathematical vocabulary. • contain minor flaws that detract from the correct reasoning or demonstration of a thorough understanding.	**A two-point response for reasoning items provides evidence of partially correct mathematical reasoning.** The response may: • display an incomplete reasoning process. • contain mathematical flaws.	**A one-point response for reasoning items provides limited evidence of correct mathematical reasoning.** The response may: • demonstrate the beginning of a valid chain of reasoning. • reflect a lack of essential understanding of the underlying mathematical concepts. • contain the correct solution, but work is limited or missing. • contain errors in the fundamental mathematical procedures or reasoning. • contain omissions or irregularities that lead to an inadequate solution.	**A zero-point response is completely incorrect, incoherent or irrelevant.**