

Scoring Rubric

The following is the rubric for the short-answer questions for all grade levels.

MATHEMATICS SCORING RUBRIC: A GUIDE TO SCORING SHORT-ANSWER ITEMS

SCORE LEVEL	MATHEMATICAL KNOWLEDGE	STRATEGIC KNOWLEDGE	EXPLANATION
4	<ul style="list-style-type: none"> * Knowledge of mathematical principles and concepts which result in a correct solution to a problem * shows complete understanding of the problem's mathematical concepts & principles * uses appropriate mathematical terminology & notations including labeling answer if appropriate, that is whether or not the unit is called for in the stem of the item. * executes algorithms completely and correctly 	<ul style="list-style-type: none"> * Identification of important elements of the problem and the use of models, diagrams, symbols and/or algorithms to systematically represent and integrate concepts * identifies all the important elements of the problem and shows complete understanding of the relationships among elements * reflects an appropriate and systematic strategy for solving the problem * gives clear evidence of a complete and systematic solution process 	<ul style="list-style-type: none"> * Written explanation and rationales that translate into words the steps of the solution process and provide justification for each step. Though important, the length of response, grammar, and syntax are not the critical elements of this dimension. * gives a complete written explanation of the solution process employed; explanation addresses both <u>what</u> was done, and <u>why</u> it was done * if a diagram is appropriate, there is a complete explanation of all the elements in the diagram
3	<ul style="list-style-type: none"> * shows nearly complete understanding of the problem's mathematical concepts and principles * uses nearly correct mathematical terminology and notations * executes algorithms completely; computations are generally correct but may contain minor errors 	<ul style="list-style-type: none"> * identifies most of the important elements of the problem and shows general understanding of the relationships among them * reflects an appropriate strategy for solving the problem * solution process is nearly complete 	<ul style="list-style-type: none"> * gives a nearly complete written explanation of the solution process employed; clearly explains <u>what</u> was done and begins to address <u>why</u> it was done * may include a diagram with most of the elements explained
2	<ul style="list-style-type: none"> * shows some understanding of the problem's mathematical concepts and principles * may contain major computational errors 	<ul style="list-style-type: none"> * identifies some important elements of the problem but shows only limited understanding of the relationships among them * appears to reflect an appropriate strategy but application of strategy is unclear, or a related strategy is applied logically and consistently * gives some evidence of a solution process 	<ul style="list-style-type: none"> * gives some written explanation of the solution process employed, either explains <u>what</u> was done or addresses <u>why</u> it was done; explanation is vague or difficult to interpret * may include a diagram with some of the elements explained
1	<ul style="list-style-type: none"> * shows limited to no understanding of the problem's mathematical concepts and principles * may misuse or fail to use mathematical terms * may contain major computational errors 	<ul style="list-style-type: none"> * fails to identify important elements or places too much emphasis on unimportant elements * may reflect an inappropriate or inconsistent strategy for solving the problem * gives minimal evidence of a solution process; process may be difficult to identify * may attempt to use irrelevant outside information 	<ul style="list-style-type: none"> * gives minimal written explanation of solution process; may fail to explain <u>what</u> was done and <u>why</u> it was done * explanation does not match presented solution process * may include minimal discussion of elements in diagram; explanation of significant elements is unclear
0	<ul style="list-style-type: none"> * no answer attempted 	<ul style="list-style-type: none"> * no apparent strategy 	<ul style="list-style-type: none"> * no written explanation of the solution process is provided

¹“As appropriate” or “if appropriate” relates to whether or not the specific elements are called for in the stem of the item.

Adapted from Lane (1993)