## MATHEMATICS SCORING RUBRIC: A GUIDE TO SCORING EXTENDED-RESPONSE ITEMS

### MATHEMATICAL KNOWLEDGE:

Knowledge of mathematical principles and concepts which result in a correct solution to a problem.

### STRATEGIC KNOWLEDGE:

Identification and use of important elements of the problem that represent and integrate concepts which yield the solution (e.g., models, diagrams, symbols, algorithms).

### **EXPLANATION:**

Written explanation of the rationales and steps of the solution process. A justification of each step is provided. Though important, the length of the response, grammar, and syntax are not the critical elements of this dimension.

# Score

- shows complete understanding of the problem's mathematical concepts and principles
- uses appropriate mathematical terminology and notations including labeling answer if appropriate
- executes algorithms and computations completely and correctly
- identifies all important elements of the problem and shows complete understanding of the relationships among elements
- shows complete evidence of an appropriate strategy that would correctly solve the problem
- gives a complete written explanation of the solution process; clearly explains what was done and why it was done
- may include a diagram with a complete explanation of all its elements

gives a nearly complete written explanation of the

may include a diagram with most of its elements

begins to address why it was done

explained

solution process; clearly explains what was done and

- shows nearly complete understanding of the problem's mathematical concepts and principles
- uses mostly correct mathematical terminology and notations
- executes algorithms completely; computations are generally correct but may contain minor errors
- shows some understanding of the problem's mathematical concepts and principles
- uses some correct mathematical terminology and notations
- may contain major algorithmic or computational errors

- identifies most of the important elements of the problem and shows a general understanding of the relationships among them
  - shows nearly complete evidence of an appropriate strategy for solving the problem
- identifies some important elements of the problem but shows only limited understanding of the relationships among them
- shows some evidence of a strategy for solving the problem
- gives some written explanation of the solution process; either explains what was done or addresses why it was done
- explanation is vague, difficult to interpret, or does not completely match the solution process
- may include a diagram with some of its elements explained

- shows limited to no understanding of the problem's mathematical concepts and principles
- may misuse or fail to use mathematical terminology and notations
- attempts an answer

- fails to identify important elements or places too much emphasis on unrelated elements
- reflects an inappropriate strategy for solving the problem; strategy may be difficult to identify
- gives minimal written explanation of the solution process; may fail to explain what was done and why it was done
- explanation does not match presented solution process
- may include minimal discussion of the elements in a diagram; explanation of significant elements is unclear

no answer attempted

no apparent strategy

no written explanation of the solution process is provided

# rubric is used for the extended-response items for grade levels 3 through **SCORING RUBRIC**