



Open-Ended Responses

Commonly Encountered Issues

Almost every open-ended mathematics question on the Delaware Student Testing Program (DSTP) includes the statement: “Show your work or explain how you got your answer.” A score depends on the quality of the response.

Clear Communication

- Responses should be so clearly written/demonstrated that someone who has not read the problem can follow the student’s reasoning and/or explanation.

Explanation of Values

- If a number is not given in the problem, the students should show how they obtained that number before using it in another step in the explanation.

Explanation/Support for the Answer

- Students usually have choices on how to explain/support their answers.
 - For “Show your work”, the students might show computation, solving equations, etc. When the students choose this approach, they should make clear use of labels for numbers from the context, identify the meaning of variables, etc.
 - For the “Explain how you got your answer”, the students should write a detailed and clearly worded response so that anyone reading it would understand the process used to solve the problem.
 - “I used a calculator” is not an acceptable explanation. When using the calculator for calculation, the students should write down what was multiplied, divided, etc. with the resulting answer. When using it for graphing or other purposes, the type of question asked and the solution can vary, so it is difficult to make specific recommendations on how the students can add to their responses, but additional information would be needed beyond “I used a calculator.”
 - Similarly, “I added” or “I multiplied” is not enough supporting evidence. The students should give more details and write down what was added or multiplied, etc.
 - Note: A correct answer only, without supporting evidence, is given no credit. [Score Point 0: Insufficient evidence of appropriate knowledge/skills to accomplish the task.]
 - When examples are needed in an explanation (i.e., justify your reasoning/answer), one example may not be enough. Usually, a single example does not show that students understand a concept. In addition, the example might be taken from the problem and be considered repeating information from the problem, but not adding new information to the explanation.
 - Sometimes students use words from the problem and the scorer is not sure if the students understand the concept or are just repeating words without understanding. Words from the problem could be part of an *expanded* explanation.



Labels and Units

- Graphs, tables, charts, etc. should be *clearly titled and labeled*. Measurements, especially at the higher grades, should *use correct units*. The students should always check to see that they are giving their answers in the units requested in the question.
- The students, especially starting in grade 5, should understand that subtraction and division are not commutative. For example, $8 \div 2$ is not equal to $2 \div 8$. Too often, the students translate a verbal statement (2 divided into 8) incorrectly as $(2 \div 8)$ and this persists in higher grades which is not acceptable.

Contextual Explanation

- When the students are asked to explain the meaning of something (slope, etc.) in the context of the problem, they must use examples from the context of the problem.

Estimation vs. Direct Computation

- When the students are asked to estimate an answer, they should demonstrate *estimation concepts/skills and not direct computation*. Reading the question is very important because the wording in the question is meant to address some aspects of the standards.

Variables and Equation

- When students are asked to write an equation, sometimes they will be given specific variables to use. Other times, they can define their own variables. In either case, they should be in the habit of clearly defining variables for the scorer.

Process and Strategy vs. Minor Errors

- Partial credit is possible for all extended responses. Depending on the item, students sometimes receive full credit for a response if there are only minor error(s). However, the process must be clearly shown.

Measurement

- With most geometry problems, especially in the upper grades, students should not answer the problem as though the drawing is drawn to scale. They shouldn't rely on measurements. Direct measurement using a ruler is assessed only in grades 2, 3 and 4.

Response Must be Universally Understood

- Students should remember that the scorer does not know them and is not familiar with their learning styles. Scorers can only judge responses by what is written. Bright students sometimes have difficulty showing all their work because an answer might be obvious to them.