
Lifeguard Procedures Report B E L O W L E V E L 1

Teacher's Notes

The following is a list of characteristics found in student work that was submitted for this task and assessed at “below level 1”. (Samples of student work are not included.)

Degree of achievement can vary widely in student performance that falls below level 1. Consequently, the following list includes characteristics of achievement at various degrees below level 1. Taken together, some or all of the characteristics outlined below may justify assessment at “below level 1”. Most of the characteristics noted relate to the criteria specified in the task rubric, but some are more broadly defined.

Knowledge and Understanding

The student:

- states simplifying assumptions that are not understandable;
- states simplifying assumptions that are not relevant to the problem;
- does not state simplifying assumptions;
- does not form a derivative, or does so incorrectly;
- makes numerous major errors in solving the resulting equations;
- is completely unable to solve the resulting equations.

Thinking

The student:

- misunderstands the meanings of the variables;
- misinterprets the solutions to the equations;
- interprets the solutions to the equations in a way that is not understandable;
- fails to see any general relationships in the solutions to the equations;
- considers too few scenarios to permit any generalizations;
- does not attempt to interpret the solutions to the equations;
- formulates hypotheses that are incomplete or confusing;
- does not explicitly state a hypothesis;
- attempts to confirm or refute the hypothesis, but is unable to do so convincingly;

- makes no attempt to confirm or refute the hypothesis;
- suggests a route for the lifeguard that is not consistent with the mathematical analysis;
- does not suggest a route for the lifeguard.

Communication

The student:

- includes diagrams that are not labelled or are labelled incorrectly;
- does not include diagrams;
- includes graphs that are not labelled or are labelled incorrectly;
- does not include graphs;
- integrates text and mathematical forms ineffectively, so that the entire report, or large parts of it, are difficult or impossible to understand;
- writes a report that is very disorganized and flows poorly;
- writes a report that lacks some major components;
- makes numerous grammatical and typographical errors that make the report difficult to understand;
- provides little or no text to explain or justify his or her mathematical thinking;
- provides little or no mathematical analysis to justify statements made in the text.

Application

The student:

- chooses inappropriate formulas for the various options;
- writes an incorrect formula to model option 3;
- does not write a formula to model option 3;
- substitutes incorrect or inappropriate values into the formulas;
- makes recommendations that are inappropriate, impractical, or impossible to understand;
- makes recommendations that are not supported by the mathematical analysis;
- makes no recommendations.

BELOW LEVEL 1

Comments

The student demonstrates little or no understanding of the task and/or the concept of differential calculus. If several components of the task are not completed, or are scored below level 1, then the overall score will be below level 1.

Next Steps

In order to improve his or her performance, the student needs to:

- clearly state relevant simplifying assumptions;
- form a derivative correctly;
- solve the resulting equations accurately;
- interpret the solutions to the equations effectively;
- find general relationships in the solutions to the equations;
- formulate clear and complete hypotheses;
- confirm or refute hypotheses convincingly;
- suggest a route for the lifeguard that is consistent with the mathematical analysis;
- include correctly labelled diagrams;
- include correctly labelled graphs;
- effectively integrate text and mathematical forms to produce a report that is clear and easy to understand;
- write a report that is complete;
- edit and proofread the report to eliminate grammatical and typographical errors;
- choose appropriate formulas for the various options;
- write a correct formula to model option 3;
- substitute appropriate values into the formulas;
- make appropriate, practical recommendations on the basis of the mathematical analysis.