Challenge

Planning Notes
- Explain the meaning of *altitude*, *ascending*, and *descending*.
- Discuss why it is important that the speed is constant. Differentiate between accelerating and staying at a constant speed.
- Review the definition of *speed* and point out that it is measured in metres per hour for this exercise.

Common Errors
- Students may have difficulty determining the speed once they have found the altitude change for 30 min.

$\mathbf{R}_x$ Help them understand that they need to double both the altitude and 30 min to find the speed.

- Some students may not be able to accurately find the difference between two given times.

$\mathbf{R}_x$ Review that each hour is 60 minutes, and that half an hour is equal to 30 minutes.

The chart below shows the Rubric for the Challenge and provides notes that specify how to identify the level of specific answers for this project.

Score/Level	Holistic Descriptor	Specific Question Notes
5 (Standard of Excellence)	❑ Applies/develops **thorough** strategies and mathematical processes for making **significant** comparisons/connections that demonstrate a **comprehensive** understanding of how to develop a complete solution ❑ Procedures are **efficient** and **effective** and may contain a **minor mathematical error** that does not affect understanding ❑ Uses **significant** mathematical language to explain understanding and provides **in-depth** support for the conclusion	• provides a complete and correct solution
4 (Above Acceptable)	❑ Applies/develops **thorough** strategies and mathematical processes for making **reasonable** comparisons/connections that demonstrate a **clear** understanding ❑ Procedures are **reasonable** and may contain a **minor mathematical error** that may hinder the understanding in one part of a complete solution ❑ Uses **appropriate** mathematical language to explain understanding and provides **clear** support for the conclusion	• provides a complete response with weak communication in at most two parts of the exercise *or* • provides a correct and complete response to any four questions *or* • provides a complete solution to all parts based on a calculation error that has been carried through correctly **Note:** If the calculation error does not affect the final conclusion, the student receives a mark of 5.
3 (Meets Acceptable)	❑ Applies/develops **relevant** strategies and mathematical processes for making **some** comparisons/connections that demonstrate a **basic** understanding ❑ Procedures are **basic** and may contain a **major mathematical error** or **omission** ❑ Uses **common** language to explain understanding and provides **minimal** support for the conclusion	• correctly completes #1 to #3 and starts #4 and #5 *or* • provides correct answers to all questions without any work or justification *or* • provides correct responses for #2 to #4
2 (Below Acceptable)	❑ Applies/develops **some relevant** mathematical processes for making minimal comparisons/connections that lead to a **partial solution** ❑ Procedures are **basic** and may contain **several major mathematical errors** ❑ Communication is **weak**	• provides correct responses to #1 and #2 or #1 and #3; communication for one part may be weak or absent *or* • provides correct responses to #4 and #5 based on correct or incorrect data values from #1 to #3
1 (Beginning)	❑ Applies/develops an **initial start** that may be **partially correct** or could have led to a correct solution ❑ Communication is **weak** or **absent**	• provides correct and complete responses to one of #1, #2a), or #3a) *or* • provides correct and complete responses to #2b) or #3b) based on incorrect values in #2a) and #3a)