Challenge

Planning Notes

- Discuss the meaning of *global warming*, *mean annual temperature*, and *trends*.
- You may wish to allow students to work in pairs to do their research.
- Students may have to do calculations to find mean annual temperatures for some locations.
- Note that climate change and global warming are not simple trends to follow. It is likely that the data students collect will not clearly indicate a global warming trend. The point is for students to collect and study the data and draw their own conclusions based on the data alone, not what they might think it should indicate.
- For Environment Canada's climate data for specific locations, go to **www.mathlinks9.ca** and follow the links.
- Encourage students to create their graphs on the computer. You may wish to specify the type of graph students should draw.
- After the assignment is complete, discuss students' data and what it means.

Common Errors

- Some students may not be objective about the data.

R$_x$ Encourage students to focus on the numbers and not be misled by the conclusions of others. For example, students' data might lead them to conclude that mean temperatures are decreasing. If this is the case, discuss the difference between climate change and global warming.

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 ❑ Uses **efficient** and **effective** procedures that 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 ❑ Uses **reasonable** procedures that 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 justification or communication in either #2a) or b) *or* • provides a complete and correct response with a graphing error
3 **(Meets Acceptable)**	❑ Applies/develops **relevant** strategies and mathematical processes for making **some** comparisons/connections that demonstrate a **basic** understanding ❑ Uses **basic** procedures that may contain a **major mathematical error** or **omission** ❑ Uses **common** language to explain understanding and provides **minimal** support for the conclusion	• correctly completes #1 and one part of #2 *or* • provides partial correct solutions to all parts of the exercise that demonstrate a basic understanding of the problem
2 **(Below Acceptable)**	❑ Applies/develops **some relevant** mathematical processes for making minimal comparisons/ connections that lead to a **partial solution** ❑ Uses basic procedures that may contain several major mathematical errors ❑ Communication is **weak**	• provides a correct and complete response to #1a) and starts part b) *or* • provides a correct and complete response to #1b); little evidence that it links to data in the table in #1a)
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 a correct start to any part of #1 or #2