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Climate Change Saskatchewan

## **CLIMATE CHANGE EDUCATION SASKATCHEWAN**

**Cross-References Between  
Saskatchewan Core Curriculum &  
Selected Instructional Resource Materials**

**Secondary Level: Grades 10 - 12**

**English Language Arts (ELA) B10  
ELA Communication Studies 20  
ELA Journalism 20; ELA Media Studies 20  
Life Transitions 20; Mathematics 10**

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Canada



**SaskEnergy**  **SaskPower**

# CLIMATE CHANGE EDUCATION

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ELA Media Studies 20; Life Transitions 20; Mathematics 10**

Major entry points - such as Knowledge, Skills and Attitude objectives - have been selected from the Saskatchewan Education/Learning curricula, including other statements and ideas from activities. Professional teachers may make other connections as they integrate instructional resources dealing with the topic of Climate Change.

## REFERENCES

**Climate Change Saskatchewan** <<http://www.climatechangesask.ca>>.

**Hands-On Math Projects With Real-Life Applications: Ready-to-Use Lessons and Materials for Grades 6-12.** (1996). Muschla, G. R., & Muschla, J. A. Center for Applied Research in Education.  
ISBN 0-87628-384-9.

**Mathematics 10: Principles and Process.** (1992). Ebos, F. et al. Nelson Canada (NEL).  
ISBN 0-17-603892-2.

**Technology and Change: Exploring Fiction, Poetry, and Non-fiction.** (1996). (Insights Series). Ballah, J. Harcourt Brace Canada. ISBN 0-7747-0149-8.

*Note.* Check the respective Saskatchewan Education/Learning ELA Bibliographies and Updates for more information about the essays, poems, and stories. These essays, poems and stories have an environmental theme, but may not refer to aspects of “Climate Change.” The literature for “Climate Change” will continue to develop.

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## SECONDARY LEVEL

### English Language Arts (ELA) B10, ELA Communication Studies 20, ELA Journalism 20 ELA Media Studies 20; Life Transitions 20; Mathematics 10

#### Grade 10 English Language Arts (B10)

#### Instructional Resources

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#### OBJECTIVES IN THE ENGLISH LANGUAGE ARTS (p. 19)

The curriculum goals are reflected in the foundational and specific learning objectives . . .

The **Foundational Objectives** will help students to:

#### Speak

- recognize that talk is an important tool for communicating, thinking, and learning
- practise the behaviours of effective speakers
- speak fluently and confidently in a variety of situations for a variety of purposes and audiences

#### Listen

- recognize listening as an active, constructive process
- practise the behaviours of effective listeners
- listen effectively in a variety of situations for a variety of purposes

#### Write

- recognize writing as a constructive and recursive process
- practise the behaviours of effective writers
- write fluently and confidently for a variety of purposes and audiences

#### Read

- recognize reading as an active, constructive process
- practise the behaviours of effective, strategic readers
- read a variety of texts for a variety of purposes.

#### Represent and View

- create appropriate nonverbal aids and visual images to enhance communication
- recognize nonverbal aids and visual representations as tools for communicating and learning.

Consult the [www.climatechangesask.ca](http://www.climatechangesask.ca) portal linking to resources for Educators, Youth, etc.

**Note.** There are relatively few instructional resources for ELA that are specific to the topic of Climate Change. Resources identified may only relate to general environmental themes/contexts and the process of integration. Teachers who find new and exciting instructional resources should let Climate Change Saskatchewan and Saskatchewan Learning know about them.

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## Grade 10 English Language Arts (B10) (continued)

## Instructional Resources

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The **LEARNING OBJECTIVES** describe the specific knowledge, attitudes, skills, and strategies that students should develop at each grade level in order to achieve the foundational objectives. These objectives guide the unit planning, instructional processes, resource selection, and assessment and evaluation. Individual student needs and abilities may require an adaptation to instruction, resources, or environment to help students achieve these objectives.

- (p. 47). English Language Arts B10 (ELA B10) is an issue-oriented course that is organized around the human concerns facing contemporary society. Issue-based units suggested in this curriculum include: **Environment and Technology--Reality and Responsibility [Focus on Climate Change]**.
- (p. 240). People too often see the world as a place of unlimited resources, rarely considering that their actions have a direct effect on everything around them. The environment influences life and shapes human feelings and opinions. This unit presents opportunities for students to explore human relationships with and responsibilities to the world of which they are a part.

### SAMPLE GUIDING QUESTIONS

In this unit, students explore the natural and technological worlds of which they are a part. Choosing appropriate guiding questions can help students grow in their language and thinking skills and in their appreciation for the issues being examined.

Consider integrating with the Science 10 Units “Greenhouse Effect” and/or “Energy Management”, or the Social Studies Grade 10 Unit “Issue of Resources”.

### Technology and Change: Exploring Fiction, Poetry, and Non-fiction.

The following titles are provided as starting points for selection. Teachers are encouraged to choose titles from this list that are appropriate to the needs, interests, and maturity of their students, and to go beyond these lists to select other appropriate resources. Please note that some of the resources listed below may be found in the lists of out of print and older resources found on page 95 of the [current] bibliography. These resources are not annotated in this bibliography; annotations for these resources may be found in previously published [Saskatchewan Education/Learning] bibliographies. Check recent updates.

**1. Survival [ & Climate Change ]** (p. 240)

**Guiding Question:** What challenges to survival does the environment present? Sample-related questions:

- What hardships and challenges do humans experience with respect to the environment? What hardships and challenges do animals experiences with respect to the environment?
- What must humans do to survive with respect to the environment? Who and what will survive? Is population survival more important than individual survival? Why or why not?

**Essays**

*All This Great Variety of Life* (The Environment)  
*Are There No Limits?* (CAN) (Technology and Change)  
*Children of the Earth* (Technology and Change)  
*Cooling the Greenhouse* (CAN) (Viewpoints)  
*Driver's TV* (CAN) (Technology and Change)  
*Get Real* (CAN) (Technology and Change)  
*The Good Old Days* (Technology and Change)  
*In the Eye of the Beholder* (The Environment)  
*The Nature of David Suzuki* (CAN)  
 Connections 2: Relating  
 Discoveries in Non-Fiction  
*On Planet Earth* (CAN) (Technology and Change)  
*Save the Green* (CAN) (Viewpoints)  
*Technology and Ecology* (CAN) (Technology and Change)  
*That Astounding Creature - Nature* (The Environment)  
*This Sacred Land* (CAN, IM) Gatherings III

**Poems**

*If a Tree Falls* (CAN) (The Environment)  
 Poetry Alive: Perspectives  
 Tracing One Warm Line  
 Sunburst  
*To Everything There is a Season*  
 Literary Experiences I  
*What the Earth Might Say* (CAN, IM)  
 Gatherings III

- What are the major threats to our environment?
- What are the most important survival qualities in our society? What images do we associate with the idea of wilderness survival?

**2. Ecology and Technology [ & Climate Change ]** (p. 241)

**Guiding Question:** What is humanity's relationship to the environment and technology? Sample-related questions:

- What is the relationship between people and nature?
- What role does technology play in our lives and in nature?
- What are our most significant technological achievements?
- How can humans work in harmony with nature and technology?
- What considerations have to be given to the environment? To our technology?
- What happens if nature's ecological balance is upset?
- What values have we been taught about taking care of the land? How do these beliefs affect our actions?
- What are our environmental issues and concerns? How do these protect the environment? What can we do, as individuals, toward environmental protection?
- What are the advantages and risks related to technology? What are our technology issues and concerns?

**Short Stories**

*The Afterlife of Ismael (CAN)* (The Environment)  
*People's Park* (Technology and Change)  
*Water (CAN)* (Technology and Change)  
*Who Can Replace a Man* (Technology and Change)

**MODULE 5: Writing Technical Articles and Reports (p. 87)**

**Description:**

This **optional module** is intended to provide students with experience in preparing written technical descriptions and written reports. The module offers students opportunities to explore reports in different disciplines so they can experience the range of reporting they might be called upon to undertake in various academic, vocational, or personal situations.

**Purposes**

- to convince students of the importance of effective communication in all aspects of their lives
- to provide opportunities for students to practice writing technical articles and reports in various contexts.

**Foundational Objectives**

- recognize the importance of effective communication in various situations
- recognize that communication is a multi-faceted process
- recognize that communication involves problem solving and decision making
- recognize writing as a constructive, meaningful process
- practise the behaviours of effective writers
- write confidently in a variety of formats for a variety of purposes and audiences
- practise the behaviours of effective, strategic readers
- enhance spoken and written presentations with appropriate visual, audio, multimedia, and other aids

Consult the [www.climatechangesask.ca](http://www.climatechangesask.ca) portal linking to resources at Educators, Youth, etc.

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## Grade 11 English Language Arts, Communication Studies 20 (continued)

## Instructional Resources

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### Specific Learning Objectives

- recognize the importance of effective communication in work and professions
- recognize the importance of effective communication in lifelong learning experiences
- select and apply appropriate methods of communication in various experiences
- recognize that communication is an interactive process between sender and receiver
- recognize the role of culture in communication
- consider purpose, occasion, and audience in communication endeavours
- think creatively and critically when speaking, listening, reading, writing, viewing, and representing
- manage time and resources when planning communication experiences
- consider the communicator's moral and ethical responsibilities
- demonstrate the ability to transmit existing information with clarity and brevity
- using appropriate writing strategies, construct first drafts, rewrite, revise, edit, and proofread
- analyze and evaluate their own and others' writing
- recognize various types of technical writing
- practise writing for informational and practical purposes
- demonstrate the ability to find and select relevant text
- recognize patterns of organization within text (chronological, spatial, logical)
- design and create aids to illustrate, focus, reinforce, demonstrate, or attract attention.

**Note.** There are relatively few instructional resources for ELA that are specific to the topic of Climate Change. Resources identified may only relate to general environmental themes/contexts and the process of integration. Teachers who find new and exciting instructional resources should let Climate Change Saskatchewan and Saskatchewan Learning know about them.

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## Grade 11 English Language Arts, Communication Studies 20 (continued)

## Instructional Resources

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### Suggested Topics [dealing with Climate Change]

- *Technical articles* (p. 88). These are written to:
  - publish the results of research
  - highlight new developments in a particular field
  - highlight the work of a prominent or innovative person or group in a particular field
  - describe new products that have been developed
  - describe new ways of solving old problems
  - share important, sound information.
- Various types of reports
- *Activity: Investigative Report* (p. 92)
  - Have students prepare an investigative report on a subject that is a major concern in the community [such as the long-term effects of Climate Change]. Consider a fairly complex problem that will require a gathering of facts from printed sources. Also, have students plan to interview at least two people for information or opinions.
- Consider publishing the students' reports in a special school publication.
- Designing reports

Consult the [www.climatechangesask.ca](http://www.climatechangesask.ca) portal linking to resources at Educators, Youth, etc.

Consider integrating with the Biology 20 Unit “Agricultural Botany of Saskatchewan” or the Social Studies Grade 11 Unit “Sustainability”.

**MODULE 1: Print Journalism** (p. 21)

In this module, students will have an opportunity to explore the processes involved in gathering and writing news, preparing an editorial, writing feature and sports stories, preparing effective photographs, and contrasting newspapers with magazines.

**Foundational objectives** are to be developed throughout the course and as they apply in each module. The foundational objectives for Journalism Studies 20 are as follows. Students will:

- recognize and appreciate the role of journalism in contemporary society and in their personal lives
- recognize and explore the ways in which print and broadcast media create and present a message
- recognize and create the various forms, conventions, and styles of journalistic writing
- recognize the attributes of quality journalism and the legal, ethical, and moral issues which confront the free press
- develop the speaking, listening, reading, writing, viewing, and representing skills needed to create various print publications and broadcast productions.

**Introduction to Print Journalism**

**Specific Learning Objectives.** Students will:

- recognize the importance for journalists of interviewing, researching, and reporting
- consider how print journalism has changed and evolved over the years
- recognize how pervasive information is in contemporary society
- recognize the role of news reporting in print media, especially newspapers
- recognize the basic formats used in newspapers
- use the inverted pyramid style of news writing
- write effective headlines
- evaluate the quality and reliability of various forms and examples of journalism.

Consult the [www.climatechangesask.ca](http://www.climatechangesask.ca) portal linking to resources at Educators, Youth, etc.

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## Grade 11 English Language Arts, Journalism Studies 20 (continued)

## Instructional Resources

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### Suggested activities

- (p. 26). Have students trace a controversial issue in the local press [**such as Climate Change: causes, effects, and/or solutions!**]. Have them keep an annotated scrapbook/log on the topic. After several weeks, invite a journalist covering the issue into the classroom to discuss the coverage. How did the journalist determine the issue was newsworthy? How were the facts determined? Were any restrictions placed on the story? By whom and why? How does the journalist ensure balanced and accurate coverage? How does this coverage affect the people involved?

Consult the [www.climatechangesask.ca](http://www.climatechangesask.ca) portal linking to resources at Educators, Youth, etc.

Consider integrating with the Biology 20 Unit “Ecological Organization” or the Social Studies 20 Unit “Environmental Harmony”.

- (p. 29). Editorials are meant to influence people’s actions.
  - Have students find something in their school or community that they would like to change [**in relation to mitigating or adapting to Climate Change**]. They should research why things are the way they are and what solutions might exist. Then, have students write a 250-300 word editorial to tell others what the problem is and what should be done.
  - Have students write an editorial on a controversial issue [e.g., **some aspect of Climate Change**] and deliver it to the class as an impassioned speech. After, have them discuss their performance and decide what aspects were fair comment and what might be considered prejudicial or unethical.
- (p. 32). Anything in the natural world [**such as Climate Change**] is subject matter for the literary nonfiction writer. The following are examples:
  - the lives of individuals (e.g., one person’s struggle)
  - human institutions (e.g., government)
  - events (e.g., current events)
  - the natural world (e.g., environmental stories).

**MODULE 1: Media Awareness (p. 25)**

Communication is closely tied to culture. Although we are not always aware of it, the mass media have a very strong influence in our lives. They present images of the world's problems, of the latest environmental disaster, of the most recent news events, and of the must-have products promoted by advertisers. These images also portray particular lifestyles and encourage us to develop expectations for ourselves and those around us.

This module is designed to introduce students to the key concepts of the course and to help them recognize the role of the mass media in their lives and in the lives of those around them. These key concepts include the following:

- The mass media are carefully crafted messages that present a particular sense of what the world is and how it works. While all of us have our own view of the way the world is "constructed", based on our experiences, many of our notions are influenced by what the mass media show us.
- Each medium has its own forms and conventions. Language, design, sound, lighting, camera angles, etc. are used to construct meaning in a particular way.
- Each media message has its own biases and ideology. It is important to recognize these values and biases in order to respond critically.
- Media messages often have commercial implications. Most media production is undertaken as a business with a goal of making a profit. This can influence what is presented in the mass media.
- The mass media are responded to and interpreted in different ways. No individual or group is entirely alike any other. Each audience will react to and interpret media messages in a different way. The informed viewer, listener, and reader analyzes the media message and tries to understand and appreciate how and why a particular interpretation is made.

**Foundational Objectives**

The foundational objectives are broad objectives that are to be developed throughout a course. They cannot be achieved or met through a single lesson or module. Students, through a variety of developmental learning experiences, will gradually grow toward the achievement of the following foundational objectives:

- recognize and appreciate the role of mass media in communication, in contemporary society, and in their personal lives
- recognize the codes, forms, and conventions of the various mass media
- recognize the ways in which the various mass media shape their messages, and construct a sense of what the world is or how it works
- analyze and evaluate the various mass media, including their sources, intents, and underlying values
- recognize the role and power of advertising in the mass media
- extend and apply their speaking, listening, writing, reading, viewing, and representing abilities
- extend and apply their representing and viewing abilities by designing and creating a media text.

**Specific Learning Objectives (p. 25)**

Learning objectives are the specific, lesson-related objectives through which the students achieve the foundational objectives. Specific learning objectives for this module are identified below.

In this module, students will:

- communicate in various formats for various audiences and purposes (C)
- respond personally and critically to a range of media (CCT)
- listen to analyze and evaluate
- write to express understanding
- work co-operatively and contribute positively in group learning situations (PSVS) (p. 26)
- relate language and literacy development to the mass media environment in which they live
- read to find meaning and interpret
- attempt to understand an author’s purpose and intentions

Consult the [www.climatechangesask.ca](http://www.climatechangesask.ca) portal linking to resources at Educators, Youth, etc.

Consider integrating with the Biology 20 Unit “Ecological Organization” or the Social Studies 20 Units “Sustainability” or “Resources Extraction” or “Renewable Resources.”

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## Grade 11 English Language Arts, Media Studies 20 (continued)

## Instructional Resources

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- define popular culture and mass media
- identify the functions of and principles behind mass media
- recognize the impact of media communications
- recognize bias and fallacies ([CCT](#))
- recognize how stereotypes can lead to prejudicial views and discriminatory actions ([PSVS](#))
- recognize the connection between the media and marketing strategies that make popular culture a business
- identify fads and the needs they address in a culture
- identify the social, economic, and political dimensions of consumer trends
- explore how technological developments shape society ([IL](#))
- evaluate the reliability of information communicated through the mass media
- collect and organize quantitative information into tables, graphs, or charts and analyze this information to determine a conclusion ([N](#))
- understand how statistics can be used to support an argument or claim and be aware that the same statistical figures can lead to seemingly different conclusions ([N](#)).

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### **The mass media presents values [such as those related to Climate Change]**

(p. 32). Each media message has its own values and biases. Have students discuss if anything in their simple ad's language or images presents a value message? (Is this product economical? Expensive and exclusive? Bought by the "in crowd"? Environmentally friendly? Family-oriented? Educational? Does its message present stereotyped ideas or images?)

### **Related Media Log Questions**

- Have students examine advertising (particularly posters) in their school. (They might consider posters for health and safety campaigns, lifestyle choices, school or career choices.) Have students consider: How effective are they? How are they constructed?

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**MODULE 7: Community Issues and Ethics [focus on Climate Change]** (p. 179) Consult the [www.climatechangesask.ca](http://www.climatechangesask.ca) portal linking to resources at Educators, Youth, etc.

- Reflect on community issues or ethical issues from the past, present or future.
- Outline the varying points of view concerning community or ethical issues.
- Critically analyze the varying points of view concerning community or ethical issues.

**Level B - Make an Informed Decision**

- State a personal challenge concerning community and ethical issues, recognizing the complexities of such issues.
- List strategies (alternatives) to meet their challenge.
- Predict the potential consequences of each alternative.
- Select the best strategy (alternative) based upon appropriate criteria.
- Compile a community issue or ethics goal statement.

**Level C - Carry Out Action Plan**

Design and carry out action plans to resolve/predict/illustrate/analyze. Draw conclusions about a community or ethical issue.

- (p. 180). Seek information through a steadily expanding network of options including other libraries, electronic information systems, databases, individuals and agencies.
- Develop questions with a respect for facts, knowledge, and social and cultural understanding in order to advance a search for information.
- Take more responsibility regarding planning, monitoring and evaluating learning experiences (e.g., using contracts; initiating conferences with teacher, peers or others outside of school).
- Construct clear, achievable goals and plan to meet them.
- Write a "proposal" for an individual project ([IL](#)).

## Grade 11 Life Transitions 20 (continued)

## Instructional Resources

- Establish arguments based upon human rights, human needs or needs of the environment when examining community issues or ethical issue
- Ground arguments on moral principles, such as truth or justice, rather than adopting moral relativism as a stance when exploring moral issues or dilemmas in community or ethical issues.
- Explore the evolution of technological innovations within community issues and ethical issues, with a focus on the political and social forces that spawned the innovation and the steps involved in the development.
- Understand that real-life problems often have more than one solution
- Generate and evaluate alternative solutions to problems
- Critique texts and other sources of information and evaluate arguments through:
  - distinguishing facts from non-facts
  - distinguishing relevant from irrelevant material
  - recognizing supported and unsupported inferences, warranted and unwarranted assumptions, verifiable and unverifiable data
  - recognizing contradictions
  - render a judgment and support that judgment by referring to clearly defined criteria.

## MODULE 7 AT A GLANCE

### Content

### Planning Process

#### Level A – Extend Knowledge Base

1. Stop and *reflect* on what you know and feel about the issue.

Overview of module.

#### [Focus on Climate Change]

- select a community or ethical issue
- prepare proposals
- outline and analyze issues.

2. *Research* the issue. Find the facts.

Consult the [www.climatechangesask.ca](http://www.climatechangesask.ca) portal linking to resources at Educators, Youth, etc.

Consider integrating with the Biology 20 Unit “Ecological Organization [Sustainable Farming]” or the Social Studies 20 Unit “Environmental Harmony”.

**Content**

**Planning Process**

- individual challenges
- strategies to meet challenges
- consequences (short & long term) of strategies
- decisions and goal setting

**Level B – Make an Informed Decision**  
3. *State* the challenge and *explore*.

4. *Determine* your decision and *set* personal goal.

- design and carry out action plans
- evaluate and revise action plans (later in the semester/year)

**Level C – Carry Out Action Plan**  
5. *Design* and *apply* action plan.  
6. *Evaluate* progress and *revise* as needed.

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**Concept B: Relations, Linear Functions, and Variation**

[Students could find the line of best fit to approximately describe the emission trends and to pose and answer questions regarding those trends. They could also be asked to identify the type of function that closest represents the data from the types of functions that they have studied to that point. By Math B30, the students could be using their understanding of logarithmic functions to approximate the behaviour of the data and to predict future values.]

**Note: D-14 discuss, interpret, and ascribe meaning to the organized data.**

[Grades 5 and 6 look at broken line graphs specifically which these are being illustrated as.]

**B.18** To interpret and critically analyze these scatterplots. (p. 132)

**Concept C: Consumer Mathematics** (p. 144)

C.8 Plan a budget based on percentages allotted to various categories as suggested by financial institutions.

**Instructional Notes: C.8**

A budget can be planned by having students research the cost of an apartment, utilities, food, and transportation. Based on this budget, what monthly salary would be required to meet these expenses? Once the suggested guidelines had been researched, students can calculate the percentage of their monthly income allotted to each category. They can compare these results to the stated percentages from the Credit Union and then make any adjustments that they see fit. [Research the question: **How can one save money by conserving energy at home or via transportation which help to mitigate and adapt to Climate Change?**]

<http://www.climatechangesask.ca/Learn-Emissions-emipro.htm>

Consult the [www.climatechangesask.ca](http://www.climatechangesask.ca) portal linking to resources at Educators, Youth, etc.

Consider integrating with the Science 10 Unit “Energy Management” or the Social Studies 10 Unit “Role of Government”.

Mathematics 10: Principles and Process

Hands-On Math Projects With Real-Life Applications

**Mathematics B30**

**Concept G: Exponential and Logarithmic Functions**

[Students could find the line of best fit to approximately describe the **emission trends** and to pose and answer questions regarding those trends. They could also be asked to identify the type of function that closest represents the data from the types of functions that they have studied to that point. By Math B30, the students could be using their understanding of logarithmic functions to approximate the behaviour of the data and to predict future values.]

**G.4** To construct graphs of exponential functions and logarithmic functions, to identify the properties of these graphs, and to recognize they are inverses of each other. (p. 478)

**G.5** To sketch graphs of exponential and logarithmic functions by selecting an appropriate point for the new origin. (p. 480)

<http://www.climatechangesask.ca/Learn-Emissions-emipro.htm>

