Alberta Provincial Achievement Testing

Assessment Highlights 2009-2010

GRADE 9

Knowledge and Employability Science

Government of Alberta

Alberta

Freedom To Create. Spirit To Achieve.

This document contains assessment highlights from the English 2010 Grade 9 Knowledge and Employability Science Achievement Test.

Assessment Highlights provide information about the overall test, the test blueprint, and student performance on the 2010 Grade 9 Knowledge and Employability Science Achievement Test. Also provided is commentary on areas of strength and weakness in student performance at the *acceptable standard* and the *standard of excellence* on selected items from the 2010 achievement test. This information is intended for teachers and is best used in conjunction with the multi-year and detailed school reports that are available to schools via the extranet. **Assessment Highlights reports** for all achievement test subjects and grades (except Grades 3, 6, and 9 Français/French Language Arts) will be posted on the Alberta Education website every year in the fall.

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The Alberta Education Internet address is education.alberta.ca.

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The 2010 Grade 9 Knowledge and Employability Science Achievement Test

This report provides teachers, school administrators, and the public with an overview of the performance of those students who wrote the 2010 Grade 9 Knowledge and Employability Science Achievement Test. The examination statistics that are included in this document represent all writers: both French and English. If you would like to obtain English-only statistics or French-only statistics that apply to your school, please refer to your detailed reports which are available on the Extranet. It complements the detailed school and jurisdiction reports.

How Many Students Wrote the Test?

A total of 1 323 students wrote the 2010 Grade 9 Knowledge and Employability Science Achievement Test.

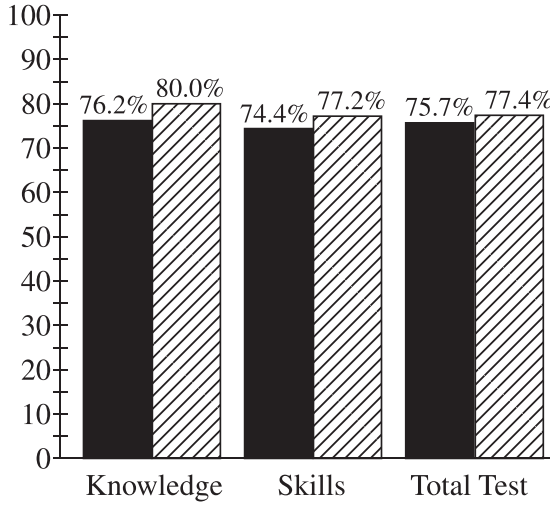
What Was the Test Like?

The 2010 Grade 9 Knowledge and Employability Science Achievement Test consisted of 50 multiple-choice questions based on five science topics: Biological Diversity, Matter and Chemical Change, Environmental Chemistry, Electrical Principles and Technologies, and Space Exploration.

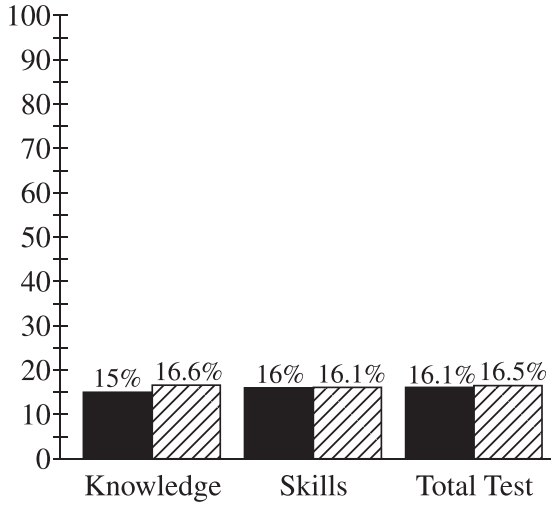
How Well Did Students Do?

The percentages of students meeting the *acceptable standard* and the *standard of excellence* in 2010 compared with 2009 are shown in the graphs below. Out of a total possible score of 50, the provincial average was 32.2 (64.4%).

Percentage of Students Meeting the *Acceptable Standard* (%)



Percentage of Students Meeting the *Standard of Excellence* (%)



2009 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2009 Grade 9 Knowledge and Employability Science Achievement Test (based on those who wrote).

2010 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2010 Grade 9 Knowledge and Employability Science Achievement Test (based on those who wrote).

2010 Test Blueprint and Student Achievement

In 2010, 77.4% of students who wrote the Grade 9 Knowledge and Employability Science Achievement Test achieved the *acceptable standard*, and 16.5% of students who wrote achieved the *standard of excellence*. These results are consistent with previous administrations of the achievement test.

The blueprint below shows the reporting categories and topics by which 2010 summary data are reported to schools and school authorities, and it shows the provincial average of student achievement by both raw score and percentage.

Topics	**Reporting Category**		**Provincial Student Achievement Average (Raw Score and Percentage)**
	Knowledge	**Skills**	
Biological Diversity			**7.5/11 68.1%**
Matter and Chemical Change			**6.4/10 64.0%**
Environmental Chemistry			**6.1/9 67.8%**
Electrical Principles and Technologies			**6.4/11 58.1%**
Space Exploration			**5.7/9 63.3%**
Provincial Student Achievement (Average Raw Score and Percentage)	**13.7/21 (65.2%)**	**18.4/29 (63.4%)**	**Total Test Raw Score = 32.2/50 (64.4%)**

Commentary on 2010 Student Achievement

The following is a brief summary of the areas where most students experienced difficulties and demonstrated strengths on the 2010 Grade 9 Knowledge and Employability Science Achievement Test. Four sample questions are also provided to highlight some of these areas. These questions are no longer secured and will not be reused on future achievement tests.

Students demonstrated relative strength by being able to:

- Identify an example of a characteristic that can be inherited
- Analyze information in a given table to draw a conclusion related to a species at risk of extinction
- Analyze information to draw a conclusion related to an environmental issue
- Determine the safest method given to dispose of hazardous work place chemicals safely
- Recall and identify an example of a given celestial body
- Analyze diagrams to draw a conclusion related to the positioning of the moon

For **multiple-choice question 2**, a **Knowledge** question, students had to recognize that species are dependent on their environment for survival. Approximately 80% of students who met the *acceptable standard* and about 90% of students who met the *standard of excellence* answered this question correctly.

2. If a species is unable to adapt to a change in its habitat, it may

A. become extinct

B. consume more prey

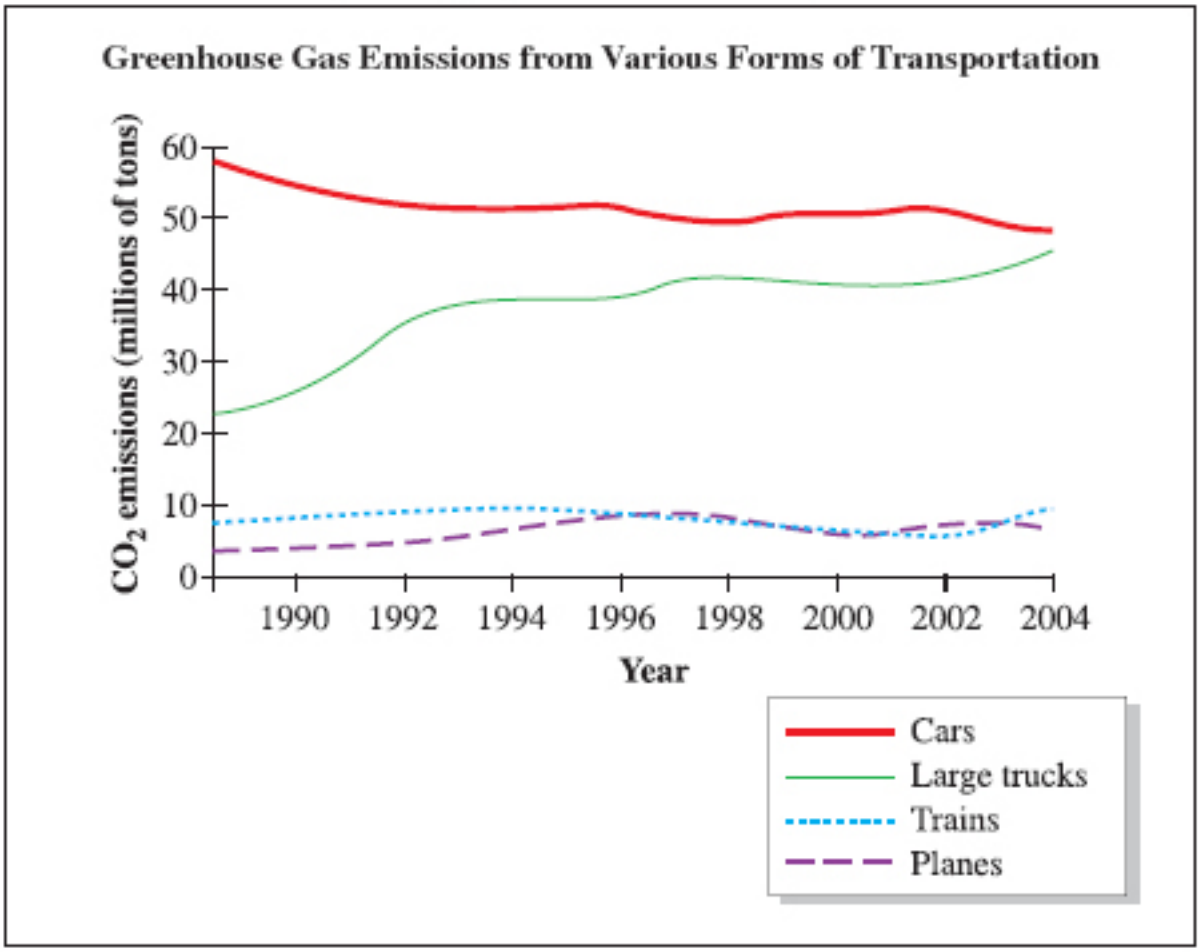
C. become more specialized

D. produce stronger offspring

77.0% of the students chose A (correct answer)
5.7% of the students chose B
10.1% of the students chose C
7.1% of the students chose D

For **multiple-choice question 29**, a **Skills** question, students had to analyze and interpret information to identify how human actions effect air quality. Approximately 74% of students who met the *acceptable standard* and about 92% of students who met the *standard of excellenc*e answered this question correctly.

Use the following information to answer question 29.



29. Based on the information in the graph above, which of the following statements is correct?

A. Emissions from cars have increased.

B. Emissions from planes decreased between 1990 and 1996.

C. Emissions from large trucks have doubled between 1990 and 2004.

D. Emissions from trains account for most of the CO_2 in the environment.

13.1% of the students chose A
9.4% of the students chose B
70.7% of the students chose C (correct answer)
6.7% of the students chose D

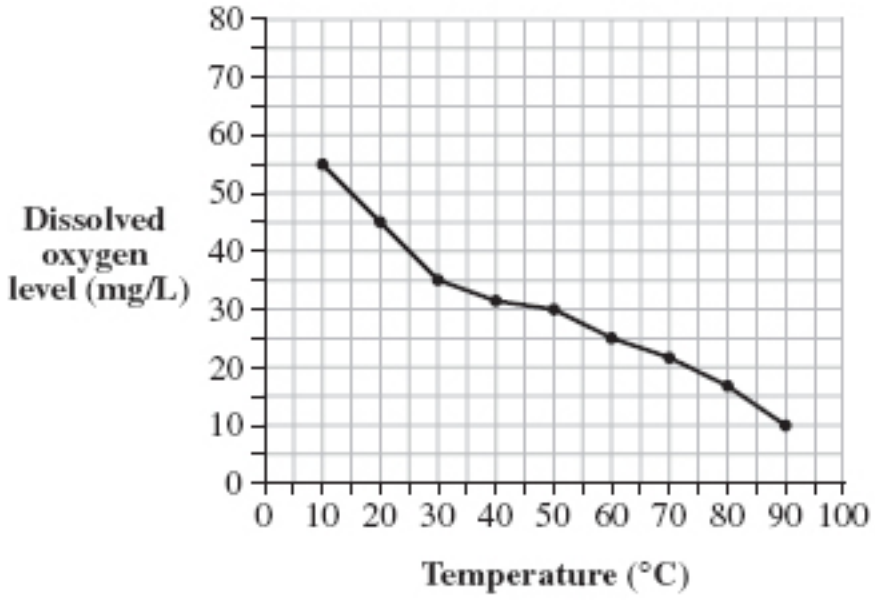
Students demonstrated relative difficulty with:

- Distinguishing between asexual and sexual reproduction in a given example
- Identifying the correct model representation of a water molecule
- Identifying a solution as acidic based on given results
- Integrating information to describe the relationship between current flow and resistance
- Analyzing information in a diagram to identify a problem related to an electrical storage cell

For **multiple-choice question 25**, a **Skills** question, students had to interpret information from a graph to draw a conclusion related to temperature and dissolved oxygen levels. Approximately 40% of students who met the *acceptable standard* and 64% of students who met the *standard of excellence* answered this question correctly.

Use the following information to answer question 25.

Dissolved Oxygen Levels in Water at Different Temperatures



25. Which of the following conclusions can **best** be drawn from the data in the graph?

A. A decrease in temperature results in no change in dissolved oxygen levels.

B. A decrease in temperature results in a decrease in dissolved oxygen levels.

C. An increase in temperature results in a decrease in dissolved oxygen levels.

D. An increase in temperature results in an increase in dissolved oxygen levels.

9.1% of the students chose A
28.3% of the students chose B
44.4% of the students chose C (correct answer)
18.1% of the students chose D

For **multiple-choice question 39**, a **Knowledge** question, students had to recall and identify a characteristic of electrical conductors. Approximately 58% of students who met the *acceptable standard* and about 79% of students who met the *standard of excellence* answered this question correctly.

39. Materials that allow electricity to flow easily are called

A. resistors

B. insulators

C. generators

D. conductors

9.1% of the students chose A
18.2% of the students chose B
14.9% of the students chose C
57.5% of the students chose D (correct answer)

Achievement Testing Program Support Documents

The Alberta Education website contains several documents that provide valuable information about various aspects of the achievement testing program. To access these documents, go to the Alberta Education website at education.alberta.ca. From the home page, follow this path: *Teachers* > *Provincial Testing* > *Achievement Tests*, and then click on one of the specific links under the *Achievement Tests* heading to access the following documents.

Achievement Testing Program General Information Bulletin

The *General Information Bulletin* is a compilation of several documents produced by Alberta Education and is intended to provide superintendents, principals, and teachers with easy access to information about all aspects of the achievement testing program. Sections in the bulletin contain information pertaining to schedules and significant dates; security and test rules; test administration and directives; test accommodations; field testing; resources and web documents; calculator and computer policies; test marking and results; samples, forms, and letters; and Learner Assessment contacts.

Subject Bulletins

At the beginning of each school year, subject bulletins are posted on the Alberta Education website for all achievement testing subjects for Grades 3, 6, and 9. Each bulletin provides descriptions of assessment standards, test design and blueprinting, and scoring guides (for Grades 3, 6, and 9 English Language Arts and Français/French Language Arts), as well as suggestions for preparing students to write the tests and information about how teachers can participate in test development activities.

Writing Samples

For achievement tests in Grades 3, 6, and 9 English Language Arts and Français/French Language Arts, writing samples have been designed to be used by teachers and students to enhance students' writing and to assess this writing relative to the standards inherent in the scoring guides for the *Part A: Writing* achievement tests. The writing samples documents contain sample responses with scoring rationales, student self-assessment checklists, and scoring categories and criteria for the writing assignments.

Previous Achievement Tests and Answer Keys

All January achievement tests (parts A and B) for Grade 9 semestered students are secured and must be returned to Alberta Education. All May/June achievement tests are secured except Part A of Grades 3, 6, and 9 English Language Arts and Français/French Language Arts. Unused or extra copies of only these Part A tests may be kept at the school after administration. Teachers may use the versions of released items and/or tests that are posted on the Alberta Education website.

Parent Guides

Each school year, versions of the *Parent Guide to Provincial Achievement Testing* for Grades 3, 6, and 9 are posted on the Alberta Education website. Each guide presents answers to frequently asked questions about the achievement testing program, sample questions for each achievement testing subject, and excerpts from the *Curriculum Handbook for Parents* identifying what students should know and be able to do in each subject by the end of Grades 3, 6, and 9.

Involvement of Teachers

Teachers of Grades 3, 6, and 9 are encouraged to take part in a variety of activities related to the achievement testing program. These activities include item development, test validation, field testing, and marking. In addition, regional consortia can make arrangements for teacher in-service workshops on topics such as Interpreting Achievement Test Results to Improve Student Learning.