

**Alberta Provincial
Achievement Testing**

**Assessment
Highlights
2011–2012**

**GRADE
9**

Knowledge and Employability Science

Alberta  Government

This document was written primarily for:

Students	
Teachers	✓ of KE Science
Administrators	
Parents	
General Audience	
Others	

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The [Alberta Education website](http://education.alberta.ca) is found at education.alberta.ca.

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The 2012 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 2012 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. This report complements the detailed school and jurisdiction reports.

How Many Students Wrote the Test?

A total of 1 351 students wrote the 2012 Grade 9 Knowledge and Employability Science Achievement Test.

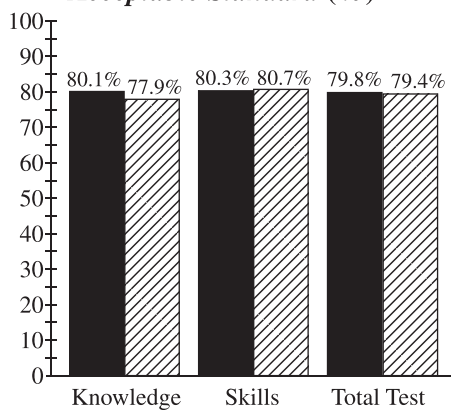
What Was the Test Like?

The 2012 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.

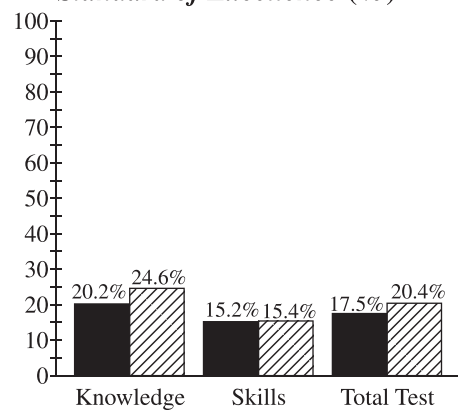
How Well Did Students Do?


The percentages of students meeting the *acceptable standard* and the *standard of excellence* in 2012 compared with 2011 are shown in the graphs below. Out of a total possible score of 50, the provincial average was 33.1 (66.2%).


Percentage of Students Meeting the Acceptable Standard (%)



Percentage of Students Meeting the Standard of Excellence (%)



 2011 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).

 2012 Achievement Standards: The percentage of students in the province who met the *acceptable standard* and the *standard of excellence* on the 2012 Grade 9 Knowledge and Employability Science Achievement Test (based on those who wrote).

2012 Test Blueprint and Student Achievement

In 2012, 79.4% of students who wrote the Grade 9 Knowledge and Employability Science Achievement Test achieved the *acceptable standard*, and 20.4% 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 2012 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			7.9/11 (71.8%)
Matter and Chemical Change			5.9/9 (65.6%)
Environmental Chemistry			6.6/10 (66.0%)
Electrical Principles and Technologies			6.7/11 (60.9%)
Space Exploration			6.0/9 (66.6%)
Provincial Student Achievement (Average Raw Score and Percentage)	14.5/22 (65.9%)	18.6/28 (66.4%)	Total Test Raw Score = 33.1/50 (66.2%)

Commentary on 2012 Student Achievement

The following is a brief summary of the areas where most students experienced difficulties and demonstrated strengths on the 2012 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 artificial selection
- Analyze information to identify a diagram that accurately reflects the given data
- Identify the characteristics of a substance based on the given WHMIS symbols
- Identify a given food group related to Canada's Food Guide to Healthy Eating
- Identify a technology that has contributed to space exploration and our everyday lives
- Apply the particle model of matter to identify a state of matter

For **multiple-choice question 19**, students had to identify the characteristics of a substance based on the given WHMIS symbols. Approximately 84.0% of students who met the *acceptable standard* and about 90.0% of students who met the *standard of excellence* answered this question correctly.

Use the following picture to answer question 19.



19. The WHMIS symbols in the picture indicate that the contents of the bottle are

- A. oxidizing and toxic
- B. flammable and toxic
- C. oxidizing and corrosive
- D. flammable and corrosive

5.0% of the students chose A
82.3% of the students chose B (correct answer)
1.6% of the students chose C
10.8% of the students chose D

For **multiple-choice question 23**, students had to identify the type and quantity of a nutrient indicated in a given set of nutrition facts. Approximately 84.0% of students who met the *acceptable standard* and about 95.0% of students who met the *standard of excellence* answered this question correctly.

Use the following information to answer question 23.

The following information is printed on a box of chicken wings:

Nutrition Facts			
Serving size 5 chicken wings (232 g)			
<hr/>			
Amount per serving			
Calories 473		Calories from fat 315	
<hr/>			
		% Daily value *	
<hr/>			
Total fat 35 g			54 %
Saturated fat	4 g		45 %
Cholesterol	137 mg		46 %
Sodium	1674 mg		70 %
Total Carbohydrate	6 g		2 %
Dietary fibre	0 g		0 %
Sugars	0 g		
Protein	33 g		
<hr/>			
Vitamin A	12 %	Vitamin C	38 %
Calcium	4 %	Iron	16 %

* Percent daily values based on a 2 000 calorie diet.
Your daily values may be higher or lower depending on your calorie needs.

23. Which row of information indicates how much salt is contained in one serving of chicken wings?
- A. Sugars
 - B. Protein
 - C. Sodium
 - D. Cholesterol

3.3% of the students chose A
4.0% of the students chose B
81.6% of the students chose C (correct answer)
10.8% of the students chose D

Students demonstrated relative difficulty with:

- Identifying a product in a simple chemical reaction
- Recognizing and identifying the pH of a neutral solution
- Interpreting information to draw a conclusion based on a given circuit diagram
- Analyzing information in a diagram to identify the positioning and motion of objects in space
- Identifying and recalling the structure of an atom

For **multiple-choice question 27**, students had to recognizing and identify the pH of a neutral solution. Approximately 44.8% of students who met the *acceptable standard* and about 76.8% of students who met the *standard of excellence* answered this question correctly.

27. Which of the following pH values indicates a neutral solution?

- A.** 5.0
- B.** 6.0
- C.** 7.0
- D.** 8.0

27.7% of the students chose A

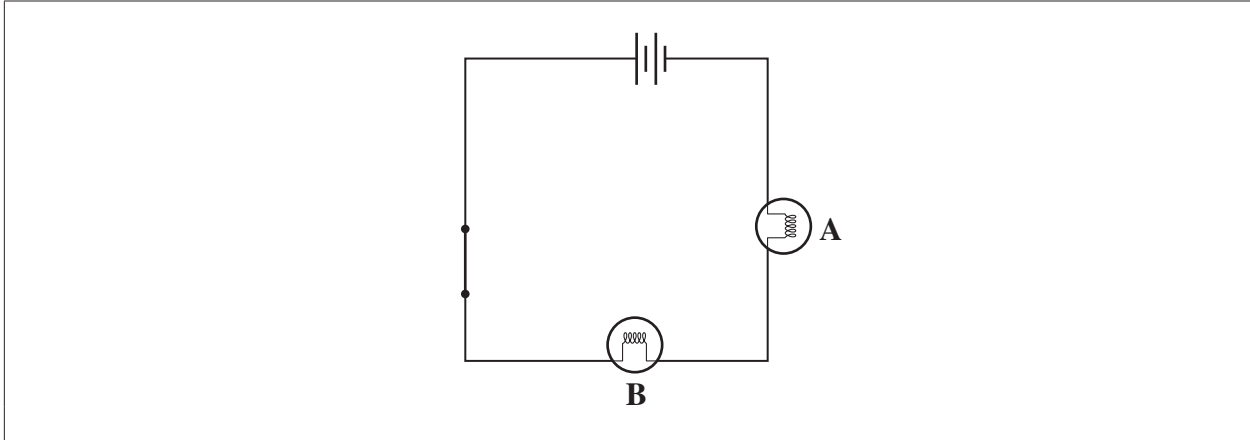
18.5% of the students chose B

45.9% of the students chose C (correct answer)

7.6% of the students chose D

For **multiple-choice question 36**, students had to interpret information to draw a conclusion based on a given circuit diagram. Approximately 55.6% of students who met the *acceptable standard* and about 91.3% of students who met the *standard of excellence* answered this question correctly.

Use the following information to answer question 36.



36. In the circuit above, if light B burns out, then it will cause

- A.** light A to go out
- B.** light A to stay lit
- C.** the battery to lose charge
- D.** the circuit wire to get warmer

49.0% of the students chose A (correct answer)

31.6% of the students chose B

10.5% of the students chose C

8.7% of the students chose D

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 directives, guidelines, and procedures; calculator and computer policies; test accommodations; test marking and results; field testing; resources and web documents; forms and samples; and Assessment Sector contacts.

Subject Bulletins

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

Examples of the Standards for Students' Writing

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 achievement tests. The exemplars documents contain sample responses with scoring rationales that relate student work to the scoring categories and scoring criteria.

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 also use the 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 as well as descriptions of and sample questions for each achievement test subject.

Involvement of Teachers

Teachers of grades 3, 6, and 9 are encouraged to take part in activities related to the achievement testing program. These activities include item development, test validation, field testing, and marking. In addition, arrangements can be made through the Alberta Regional Professional Development Consortia for teacher in-service workshops on topics such as Interpreting Achievement Test Results to Improve Student Learning.